

# Sophie Preckler-Quisquater

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## RESEARCH INTERESTS

Integrating traditional ecological field methods with genetic and genomic tools to investigate the natural and anthropogenic drivers of local adaptation and shifting range dynamics in mammalian wildlife.

## EDUCATION

- 2016 – **Ph.D. in Ecology with an Emphasis in Ecological Genetics and Genomics**  
2022 University of California at Davis. Davis, CA  
Supervisor: Dr. Ben Sacks.  
2008 – **B.S. in Evolution, Ecology, and Biodiversity**  
2012 College of Biological Sciences  
University of California at Davis. Davis, CA

## RESEARCH PUBLICATIONS

- Jan 2021 Quinn CB, **Preckler-Quisquater S**, Akins JA, Cross P, Alden PB, Vanderzwan SL, Stephenson JA, Figura P, Green GA, Hiller T, Sacks BN. 2022. *Contrasting genetic trajectories of endangered and expanding red fox populations in the western U.S.* *Heredity*.
- Dec 2020 Sacks BN, Mitchell KJ, Quinn CB, Hennelly LM, Sinding MHS, Statham MJ, **Preckler-Quisquater S**, Fain SR, Kistler L, Vanderzwan SL, Meachen JA, Ostrander EA, Frantz LAF. 2021. *Historical mitochondrial genomes reveal Pleistocene origin of the red wolf and insights for North American Canis phylogeography.* *Molecular Ecology*. 30:4292–4304.
- Nov 2018 Agha M, Batter T, Bolas EC, Collins AC, Gomes da Rocha D, Monteza-Moreno CM, **Preckler-Quisquater S**, Sollman R. 2018. *A review of wildlife camera trapping trends across Africa.* *African Journal of Ecology*. 56(4):694-701. Authors ordered alphabetically with equal contribution.
- Aug 2018 Black KM, **Preckler-Quisquater S**, Batter TJ, Anderson S, Sacks, BN. 2018. *Occupancy Modeling to Characterize Habitat Use and Population Size of the Sacramento Valley Red Fox.* *Journal of Wildlife Management*. 83:158-156.
- In Review Kierepka E, **Preckler-Quisquater S**, Reding D, Piaggio A, Riley S, Sacks BN. (In Review) *Genomic analysis of ancient gray fox lineages in secondary contact suggests cryptic speciation within the most basal canid.* *Heredity*
- In Prep **Preckler-Quisquater S**, Quinn CB, S. Sacks, BN. (In Prep). *Maintenance of a narrow hybrid zone between native and introduced red foxes despite conspecificity and high dispersal capabilities*
- In Prep **Preckler-Quisquater S**, Kierepka E, Reding D, Piaggio A, Sacks BN. (In Prep). *Population genomics reveals distinct demographic histories among extant gray fox (Urocyon) lineages in North America*
- In Prep **Preckler-Quisquater S**, Kierepka E, Reding D, Piaggio A, Sacks BN. (In Prep). *Whole genome sequencing reveals recent and ongoing admixture between highly divergent gray fox lineages*
- In Prep **Preckler-Quisquater S**, Oleksy SP, Quinn CB, Sacks, BN (In Prep). *Morphological signatures of elevational adaptation between closely related red fox lineages in the western United States.*

## TECHNICAL REPORTS

- April 2022 Sacks BN, Quinn CB, **Preckler-Quisquater S**. 2022. *Genomic markers for the Sierra Nevada red fox.* Report to the U.S. Fish and Wildlife Service, 30 April 2022.
- May 2019 Bellido F, Broad A, Gaffney S, Hernandez D, Holmes A, Lo V, Moore-O’Leary K, Peckney J, **Preckler-Quisquater S**, Schwartz M, Wiener J, Williamson M. *Climate Threats Assessment for the Kern and Pixley National Wildlife Refuges.* Report generated for USFWS. \*Authors listed in alphabetical order
- Sep 2017 **Preckler-Quisquater, S.**, Anderson, S., Nguyen, C., Sacks, B.N. 2017. *Range-wide Occupancy Survey for the Sacramento Valley red fox.* Final Report to the California Department of Fish and Wildlife. September 30, 2017. pp.1-18.

## AWARDS & FELLOWSHIPS

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Aug 2022	The Wildlife Society, Molecular Ecology Working Group Travel Grant
Feb 2022	Best Poster Presentation – Graduate Student Symposium in Ecology
2020-2021	Kit Rice Ecology Fellowship (\$4,000)
2020-2021	UC Davis Graduate Group in Ecology Fellowship (\$13,000)
Feb 2020	Best Oral Presentation – The Wildlife Society Western Section
2019-2020	UC Davis Graduate Group in Ecology Fellowship (\$12,000)
2018-2019	William and Linda Sullivan Environmental Sciences Scholarship (\$2,000)
2017-2018	UC Davis Graduate Group in Ecology Fellowship (\$12,000)
2017-2018	UC Davis Ecology Student Endowment Award (\$1,500)

## PROFESSIONAL PRESENTATIONS

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Nov 2022	<b>Preckler-Quisquater S</b> , Kierepka E, Reding D, Piaggio A, Riley S, Sacks BN. (Accepted Abstract). <i>Whole-genome sequencing uncovers recent admixture pulses and selective introgression between highly divergent gray fox lineages</i> . Oral Presentation. The Wildlife Society National Conference. Spokane, WA.
Feb 2022	<b>Preckler-Quisquater S</b> , Kierepka E, Reding D, Piaggio A, Riley S, Sacks BN. (2022) <i>Genomic sequencing across a zone of secondary contact uncovers complex demographic history and admixture between cryptic gray fox lineages</i> . Poster Presentation. The Western Section of The Wildlife Society Conference. Reno, NV
Feb 2022	Quinn CB, <b>Preckler-Quisquater S</b> , Carlson J, Figura P, Akins J, Hiller T, Sacks BN. (2022) <i>Genomic consequences of population declines in the Sierra Nevada and Cascade red fox subspecies</i> . Poster Presentation. The Western Section of The Wildlife Society Conference. Reno, NV
Feb 2022	<b>Preckler-Quisquater</b> , Kierepka E, Reding D, Piaggio A, Riley S, Sacks BN. (2022) <i>Genomic sequencing across a zone of secondary contact uncovers complex demographic history and admixture between cryptic gray fox lineages</i> . Poster Presentation. UC Davis Graduate Student Symposium in Ecology. <u>Awarded Best Poster Presentation</u> .
Jan 2022	<b>Preckler-Quisquater S</b> , Kierepka E, Reding D, Piaggio A, Riley S, Sacks BN. (2022) <i>Genomic sequencing across a zone of secondary contact uncovers complex demographic history and admixture between cryptic gray fox lineages</i> . Poster Presentation. International Plant and Animal Genomics Conference. Virtual.
Feb 2020	<b>Preckler-Quisquater S</b> , Sacks BN. (2020) <i>Do Reproductive Barrier Genes Contribute to the Maintenance of Distinct Red Fox (Vulpes vulpes) Populations across a Zone of Secondary Contact?</i> Oral Presentation. The Wildlife Society Western Section Conference. Redding, CA. <u>Awarded Best Oral Presentation</u> .
Feb 2020	Davis, TM, <b>Preckler-Quisquater S</b> , Sacks BN. (2020) <i>Optimizing tissue sampling and extraction protocols for next-generation genomic sequencing</i> . Poster Presentation. The Wildlife Society Western Section Conference. Redding, CA. <u>Awarded Best Poster Presentation</u> .
Feb 2020	Serrano M, Owen JD, <b>Preckler-Quisquater S</b> , Vanderzwan S, Sacks BN. (2020) <i>San Francisco Urban Coyote Repopulation: A Noninvasive Genetic Perspective</i> . Poster Presentation. The Wildlife Society Western Section Conference. Redding, CA.
Jan 2020	<b>Preckler-Quisquater S</b> , Sacks BN. (2020) <i>Do Reproductive Barrier Genes Contribute to the Maintenance of Distinct Red Fox (Vulpes vulpes) Populations across a Zone of Secondary Contact?</i> Poster Presentation. International Plant and Animal Genomics Conference. San Diego, CA.
Sep 2019	<b>Preckler-Quisquater S</b> , Sacks BN. (2019) <i>Does Natural Selection Affect Gene Flow Between Nonnative and Native Red Fox Populations?</i> Oral Presentation. The Wildlife Society National Conference. Reno, NV.
Feb 2018	<b>Preckler-Quisquater S</b> , Anderson S, Buchalski M, Sacks BN. (2018) <i>Assessing selective introgression of nonnative red fox genes into the genomic background of the native Sacramento Valley red fox</i> . Poster Presentation. The Wildlife Society Conference Western Section Conference. Santa Rosa, CA.
Nov 2017	<b>Preckler-Quisquater S</b> , Anderson S, Buchalski M, Sacks BN. (2017) <i>Assessing selective introgression of nonnative red fox genes into the genomic background of the native Sacramento Valley red fox</i> . Poster Presentation. CA Dept. of Fish & Wildlife Science Symposium.
Nov 2017	<b>Preckler-Quisquater S</b> , Anderson S, Miles K, Batter TJ, Sacks BN. (2017) <i>Occupancy estimation as a tool to test and refine a predictive species distribution model for the Sacramento Valley red fox (Vulpes vulpes patwin)</i> . Poster Presentation. CA Dept. of Fish & Wildlife Science Symposium.
Jun 2017	<b>Preckler-Quisquater S</b> , Anderson S, Miles K, Batter TJ, Sacks BN. (2017) <i>California Native Species Presentation: Sacramento Valley red fox (Vulpes vulpes patwin)</i> . Oral Presentation. California Natural Diversity Database Branch. Sacramento, CA.

Mar 2017	<b>Preckler-Quisquater S</b> , Anderson S, Miles K, Batter TJ, Sacks BN. (2017) <i>Summary of Results on a three-year State Wildlife Grant funded study on the Sacramento Valley red fox (Vulpes vulpes patwin)</i> . Oral Presentation. California Dept. of Fish & Wildlife. Rancho Cordova, CA.
Nov 2017	<b>Preckler-Quisquater S</b> , Anderson S, Miles K, Batter TJ, Sacks BN. (2017) <i>Occupancy estimation as a tool to test and refine a predictive species distribution model for the Sacramento Valley red fox</i> . Poster Presentation. CA Dept. of Fish & Wildlife Science Symposium.
Feb 2017	<b>Preckler-Quisquater S</b> , Miles K, Batter TJ, Anderson S, Sacks BN. (2017) <i>Occupancy estimation as a tool to test and refine a predictive species distribution model for the Sacramento Valley red fox</i> . Oral Presentation. The Wildlife Society Western Section Conference. Reno, NV.
Feb 2017	<b>Preckler-Quisquater S</b> , Miles K, Batter TJ, Anderson S, Sacks BN (2017) <i>Occupancy estimation as a tool to test and refine a predictive species distribution model for the Sacramento Valley red fox</i> . Oral Presentation. UC Davis Graduate Student Symposium in Ecology, UC Davis. Davis, CA
Feb 2016	<b>Preckler-Quisquater S</b> , Batter TJ, Anderson S, Sacks BN. (2016) <i>Increasing distribution of nonnative red fox haplotypes within the range of the native Sacramento Valley red fox</i> . Poster Presentation. The Wildlife Society Western Section Conference. Pomona, CA.

## TEACHING

1 semester	<b>Invited Guest Lecturer</b> . Conservation Biology. American River College. Sacramento, CA. Fall 2020
1 semester	<b>Invited Guest Lecturer</b> . Ecology. American River College. Sacramento, CA. Fall 2020
1 semester	<b>Invited Guest Lecturer</b> . Wildlife Biology. American River College. Sacramento, CA. Spring 2020
3 semesters	<b>Invited Guest Lecturer</b> . Mammalogy. Sacramento State University. Sacramento, CA. Fall 2017-2019.
1 quarter	<b>Teaching Assistant</b> . Field Methods in Wildlife, Fish, & Conservation Biology. UC Davis, CA.
3 quarter	<b>Teaching Assistant</b> . Introduction to Evolution. Biological Sciences Department. UC Davis, CA.
5 quarters	<b>Teaching Assistant</b> . Introductory Biology: Principles of Ecology and Evolution. Biological Sciences Department. UC Davis. Davis, CA.
March 2019	<b>Software Carpentry Instructor Training</b> . Trained in evidence-based pedagogy for teaching foundational computational and data science skills to diverse groups of researchers.
Fall 2020	<b>Teaching Methods in Science and Society</b> . Received training in mentorship, teaching methods, and course design

## MENTORSHIP

Summer 2022	<b>NSF REU Mentor</b> to Katelyn Sanchez. Ecological and Evolutionary Response to Rapid Environmental Change (EERREC) Research Experience for Undergraduates (REU). National Science Foundation. Hosted at UC Davis. Independent research project: <i>Genetic Diversity of the San Joaquin Kit Fox</i> .
2020 – 2021	<b>Career Discovery Group Mentor</b> to 21 first-year, UC Davis undergraduate students. Working to guide them throughout the 2020-2021 school year as they assess their skills, interests, and values, and the role in which these play in successfully choosing a major and building a career.
2019 – 2021	<b>Graduate Student Mentor</b> to Stephanie Oleksy. Undergraduate Animal Biology Research Practicum: <i>Museum skull specimens offer insight into ecologically relevant body size differences between closely related montane and lowland red fox subspecies</i> .
2018 – 2019	<b>Graduate Student Mentor</b> to Taylor Davis. Independent research project: <i>Optimizing tissue sampling and extraction protocol for next-generation genomic sequencing</i> .
2017 – 2018	<b>Graduate Student Mentor</b> to Emma Sutphin. Undergraduate Animal Biology Research Practicum: <i>Comparison of photographic and genetic determination of abundance of Sacramento Valley Red Foxes (Vulpes vulpes patwin) at den sites</i> .
2016 – 2017	<b>Graduate Student Mentor</b> to Nicole Gonzalez. Undergraduate Animal Biology Research Practicum: <i>Contrasting Relative Abundance Indices between Designated and Non-Designated Wildlife Areas</i> .

## PROFESSIONAL AFFILIATIONS

The Wildlife Society – member  
Society of Conservation Biology – member  
Molecular Ecology Working Group (TWS) – member  
Western Section of The Wildlife Society – member

## PROFESSIONAL SERVICE

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- 2019, 2020 **Co-Chair** – Graduate Student Symposium in Ecology  
2017, 2019 **Committee Member** – UC Davis Graduate Group in Ecology Admissions  
2017, 2018 **Committee Member** – Graduate Student Symposium in Ecology  
2016, 2017 **Meeting Representative** – Graduate Student Association

## PUBLIC SERVICE & OUTREACH

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- Fall 2021 **Preckler-Quisquater S.** (2021) *Trappers help fill the knowledge gap in North American red fox history*. Saskatchewan Trappers Association Magazine. Fall 2021. Popular science publication written as part of a broader coordinated effort to obtain genetic samples from trappers throughout Canadian provinces.  
Dec 2020 **Preckler-Quisquater S.** (2020) *Peaks, Valleys, and Farms: Insights into the complex heritage of western red foxes*. Yolo Basin Foundation Flyway Nights Speaker Series, **Invited Speaker**.  
2017 – 2022 UC Davis Girls Outdoor Adventure in Leadership and Science (GOALS). **Founding member**. Developed a free, immersive summer science program for high school girls and gender-expansive youth.  
Apr 2016 **Preckler-Quisquater S.** (2021) *Current status of the Sacramento Valley red fox in light of a proposed RV Campsite development at a sensitive denning site*. CA State Parks Commission. Invited Speaker.

## RESEARCH EXPERIENCE

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- Aug 2022 – **Postdoctoral Research**. Effects of disease outbreaks on metapopulation connectivity, genetic diversity, and inbreeding-load in the San Joaquin kit fox. Mammalian Ecology and Conservation Unit. Davis, CA.  
Present  
Sep 2016 – **Graduate Research**. Ph.D. in Ecology with an Area of Emphasis in Ecological Genetics and Genomics, UC Davis, Ecology Graduate Group, P.I. Sacks BN. Davis, CA  
Aug 2022  
Jun 2015 – **Field Technician**. Sacramento Valley red fox project. UC Davis – California Department of Fish and Wildlife. P.I Sacks BN. Davis, CA.  
Aug 2016  
Nov 2013 – **Biological Science Technician**. Fisher Research Project, Pacific Southwest Research Station, US Forest Service. P.I. Thompson C. Oakhurst, CA.  
May 2015  
Apr 2013 – **Biological Science Technician**. Sierra Nevada Adaptive Management Project – Pacific Fisher Monitoring, UC Berkeley. P.I. Roller G. Oakhurst, CA.  
Nov 2013  
Jan 2012 – **Field Technician**. Mendocino Deer and Mountain Lion Project. UC Davis – California Department of Fish and Wildlife. P.I. Forrester T. Mendocino National Forest, CA.  
Mar 2013  
Sep 2010 – **Research Intern**. Giraffe Research Project. UC Davis – Kenya Wildlife Service. P.I. Vanderwaal K. Davis, CA – Ol' Pejeta Nature Conservancy, Nanyuki, Kenya.  
Aug 2011  
Dec 2010 – **Research Intern**. Chimpanzee Research Project. UC Davis. P.I. Sharpe N. Oakland Zoo, Oakland, CA  
Jun 2011 – Ol' Pejeta Nature Conservancy, Nanyuki, Kenya.