Samuel Lewis
(408) 458-6744; sintel90@gmail.com
67 Guerrero Ave
Half Moon Bay, CA 94019

Curriculum Vitae

EDUCATION

2023-Present	PhD	Fisheries, Wildlife, and Conservation Biology, Colorado State University GPA – 4.00
2024	Cert.	Graduate Certificate in Data Analysis Colorado State University GPA – 4.00
2022	M.S.	Fisheries, Wildlife, and Conservation Biology, Colorado State University GPA – 4.00
2018	B.S.	Aquatic Biology, *Magna Cum Laude* University of California, Santa Barbara – UCSB GPA – 3.83

RELEVANT PROFESSIONAL EXPERIENCE

Aug. 2023-Dec. 2023 — ***College Instructor***
Colorado State University
-FW400 Fisheries Conservation

- Provided an overview of the current status of fish and aquatic ecosystems, anthropogenic stressors that affect these resources, and conservation strategies to sustain aquatic biota
- Strong emphasis was placed on critical thinking, problem solving and communication skills

Jan 2021-May 2024 — ***Graduate Teaching Assistant***
Colorado State University
– NR 120 Environmental Conservation

- Covered topics ranging from environmental change, human society, and the sustainability of natural resources from local to global scales
- Assisted with teaching a 150-student introduction course

– FW 301 Ichthyology Lab

- Sole instructor for laboratory course
- Develop lessons to teach students fish morphology and identification skills
- Manage laboratory space and specimen collection
- Manage classroom while enforcing university policies and respecting students

Jan. 2021 - Present — ***Graduate Research Assistant***
Colorado State University – Stream Fish Ecology Lab

- Data analysis in R, Python, and Excel
- Perform electrofishing and collect eDNA for population estimates
- PIT tag implantation and array set up

- Gastric lavage of fish for diet analysis
- Develop methods for stream fish experimentation
- Maintain fish health and aquaculture of stream fish
- Write experimental protocols and IACUC approval
- Hire, manage, and culture research interests in interns

Jan. 2021 – Jun. 2022 ***Water Quality Sonde Research and Development Assistant***
River Science

- Coordinated with senior developers on the creation of a new sonde that transmits live water quality data (i.e. pH, conductivity, temperature, ammonium, & nitrate)
- Development of sonde QA/QC and calibration techniques

Jul. 2020 – Oct. 2020 ***Aquatic Ecotoxicology Research Technician***
Colorado Parks and Wildlife

- Performed experiments to determine tolerances of macroinvertebrates and fish to aqueous toxicants
- On-site analysis of organic chemicals including rotenone and dye using high performance liquid chromatography (HPLC). This provided crucial information to managers during piscicide applications to remove invasive fish.
- Combined Colorado Parks and Wildlife, River Watch, USGS, AWQMS, CDN databases to determine what water quality standards may be underproductive of aquatic life.
- In-field spectrofluorometric analyses of algal community composition.
- Performed analyses in R that identify trends between heavy metals in Colorado rivers with fish abundance, biomass, and diversity
- Fabricated and maintained laboratory equipment. Ordered supplies and reagents. Supervised and instructed workers. Planned and organized field sampling trips.

Jan. 2020 – Jun. 2020 ***Analytical Chemistry River Watch Internship***
Colorado Parks and Wildlife

- Developed protocols and analyzed nutrient and metal samples for Lachat and ICP-OES instruments. Critiqued and improved instrumentation methods. Cooperated with private and public laboratories. Assigned quality assurance samples, used external standards and laboratories, to ensure data users that results were accurate and precise. Ran extensive experiments to lower detection limits, reduce variability in metal and nutrient samples.
- Managed laboratory chemicals and wastes
- Supervised analysis of TSS and TDS samples at a remote laboratory.
- Developed R scripts for data analysis and quality assurance verification for 30-year dataset

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- Composed reports detailing the water quality of Colorado's rivers and streams for fisheries managers, data users and for listing/compliance of 303d of the clean waters act.
- Worked with CDPHE and other external stakeholders to manage aquatic life regulations including compliance with water quality standards and 303d listing.

Apr. 2019 – Sept. 2019 ***Invasive Species Sampling and Identification Technician***
Colorado Department of Agriculture

- Independent deployment and service of exotic insect traps
- Use of ArcGIS and Collector to create maps for trap monitoring
- Collection of insect specimens for identification and recording data onto data sheets
- Collection of GPS data and performed visual surveys for exotic plant diseases and noxious weeds
- Worked with stakeholders and data users to develop collection strategies to protect crops from invasive pests

Oct. 2015 - Jun. 2018 ***Undergraduate Research Assistant***
Santa Barbara Coastal Long-Term Ecological Research Project

- Organized and analyzed water, sediment, and biological specimen samples collected via SCUBA
- Performed quality control analysis using SAS and R on data collected in the field
- Programmed, prepared, and deployed instruments for light, PH, and temperature data collection
- Trained new interns in lab procedures, safety, and data entry/organization
- SCUBA based sampling of macro algae, macroinvertebrates, and fish of temperate rocky reefs
- Research vessel base assessment of conductivity, temperature, depth, dissolved organic carbon, and currents

PRESENTATIONS

2025 Leveraging Mental Models and Adaptive Governance for Fisheries Conservation in Western River Basins – Presented at Western Division & National American Fisheries Society

2024 An ecotoxicological evaluation of salinity on lethal and sub-lethal effects in invasive mosquitofish and native plains topminnow - Presented at Colorado/Wyoming & National American Fisheries Society, and Rocky Mountain SETAC annual meetings – won best student presentation at SETAC

2023	An Experimental Test for Coexistence with the Freshwater Invader, Western Mosquitofish – Presented at Colorado/Wyoming and Regional Western Division American Fisheries Society annual meetings
2022	Condition-specific competition between native Plains Topminnow and non-native Western Mosquitofish – Presented at Colorado/Wyoming, Regional Western Division American Fisheries Society, and Joint Aquatic Sciences annual meetings
2022	Colorado Native Topminnow and Non-native Mosquitofish Competition – presented at Lois Webster Fund annual research results meeting

AWARDS & HONORS

2025	American Fisheries Society Skinner Award – awarded $1,000
2025	American Fisheries Society Western Division Travel – awarded $1,000
2024-2025	Douglas L. Gilbert Memorial Scholarship – awarded $925
2023-2024	Dr John C and Marietta Peters Fellowship – awarded $15,9000
2023-2024	Hill Memorial Fellowship – awarded $4,750
2023-2024	SOGES Sustainability Leadership Fellowship – Specialized Training Support
2023	Y Cross Ranch Scholarship – awarded $2,000
2022-2023	Colorado Graduate Grant Recipient – awarded $7,500
2022-2023	Jack and Retha Grieb Memorial – awarded $3,857
2022	NSF GRFP Honorable Mention
2021 - 2022	Dr. John and Marietta Peters Scholarship – awarded $950
2021 - 2022	J.W Powell Graduate Fellowship – awarded $2,945
2016 – 2018	Bentson Scholarship for academic superiority and research initiative in Aquatic Biology - awarded $5000/year
2016	Coastal Fund Scholarship for excellence in AAUS Scientific Scuba certification – awarded $250
2015 – 2018	Dean's List
2015	UCSB Research experience for undergraduates –REU – awarded $4500

FUNDED RESEARCH PROPOSALS

2023-2024	*Using mental models to understand the governance of adaptive river management for aquatic ecosystem sustainability.* **$19,261.** Colorado Water Center USGS 104B Project. J. Salerno (Advisor).

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2022-2023 *Literature Review of Water Depth and Velocity use by Native Stream Fish in Colorado.* **$49,344.** Colorado Water Center Faculty Grant Program. Y. Kanno (PI); **S. Lewis** wrote 95% of the grant proposal as a graduate student.

2021-2022 *Experimental tests of condition-specific competition between native plains topminnow and non-native mosquitofish.* **$4,875**. Lois Webster Fund. Y. Kanno (PI).

PUBLICATIONS

2024 Plains Fish: Anything but Plain. Colorado State University School of Global Environmental Sustainability. Blog Post.

2024 *Renewal*. Colorado Water Trust Writing Contest. **Third place winner**.

2024 **Lewis, Samuel T**., Salerno, Jonathon D., Sanderson, John S., Kanno, Yoichiro. (2024). An experimental test of intra- and inter-specific competition between invasive western mosquitofish (*Gambusia affinis*) and native plains topminnow (*Fundulus sciadicus*). Freshwater Biology [Early View]. doi:10.1111/fwb.14295.

2023 Kanno, Yoichiro, Locklear, Megan L., Platis, Nitsa M., **Lewis, Samuel T**. (2023). Body condition metrics explain fish movement in experimental streams. Journal of Zoology.

2021 Ciepiela, Lindsy R., Fitzpatrick, Ryan., **Lewis, Samuel**., Kanno, Yoichiro. (2021) Behavioral Interactions between a Native and an Invasive Fish Species in a Thermally Heterogeneous Experimental Chamber. Fishes 6.4: 75.

RESEARCH PROJECTS

Spring/Summer 2023 ***A Literature Review of Water Depth and Velocity use by Native Stream Fish in Colorado -*** This literature review examines the water depth and velocity preferences of 25 native stream fish species in Colorado by systematically analyzing 139 studies that provided direct measurements of these habitat parameters. Using databases like Web of Science and the American Fisheries Society Gray Literature Database, researchers compiled and screened over 5,000 sources, ultimately selecting studies based on PRISMA guidelines. Data on fish life stages, sample sizes, and habitat characteristics were extracted and analyzed providing insights into habitat suitability for native fish conservation and management for Colorado's Instream Flow program.

Summer 2021/Fall 2023 ***Evaluating invasive mosquitofish impacts on plains topminnow under different salinity conditions -*** Examined the effects of three different salinity concentrations on the fitness of native plains topminnow and mosquitofish. These fish exist in habitats with extreme variation in salinity, water temperature, and dissolved oxygen and were first exposed to different salinity levels and then their fitness was assessed using Critical Thermal Maxima tests to examine the effects of varying salinity levels and temperature on

individual fish fitness. Discovered that topminnow are highly susceptible to changes in salinity while mosquitofish remain resilient even at the highest treatments.

Summer 2021 ***Experimental test of condition-specific competition between native plains topminnow and non-native mosquitofish -*** Designed experiments to identify how competition is regulated at three temperatures of 16° C, 22° C, and 28° C at varying densities of 40, 60, 80, 100, and 120 fish and recorded fish habitat preference between high and low flow pools. Three separate three weeklong experiments were aimed to identify these effects on PTM alone, MSQ alone, and the two species in sympatry. Found that higher densities and warmer temperatures may be equalizing mechanisms in mediating coexistence within the preferred habitat between mosquitofish and topminnow.

Summer 2020 ***Effects of Magnesium Chloride on Temperature and Dissolved Oxygen Tolerance of Greenback Cutthroat Trout*** - Performed a toxicity experiments exposing Colorado's native threatened Greenback Cutthroat Trout to Magnesium Chloride. Evaluated critical thermal maxima and dissolved oxygen minima tolerances to assess how the toxicant affected tolerance to high temperature and low oxygen, two water quality parameters predicted under most climate change models. Found reduced thermal tolerance after four days of exposure to the national acute concentration limit of chloride.

Winter 2018 ***Comparison of Physical and Chemical Properties of Arctic Lakes*** - Analysis of physical properties of lake data in MATLAB. Summarize findings of physical properties such as nutrient availability to explain biological processes. Discussion of ecological and biogeochemical consequences based on available data

Fall 2018 ***Australian Marine Ecology and Conservation -*** Developed and carried out two original research projects involving marine ecology at two distinct research stations, Stradbroke Island (seagrass habitat) and Heron Island (tropical reef habitat). My projects involved (1) testing the effectivity of artificial sea grass to promote *syngnathid* conservation and (2) *holothurian* defense mechanisms at different predation exposures. Each project resulted in manuscripts detailing the research and findings

Summer 2016 ***Research experience for undergraduates (REU)*** -Immersion into the research activities and goals of the Santa Barbara Coastal Long-Term Ecological Research project. SCUBA surveys of temperate reef organisms and deployment of light, pH, temperature, wave energy, and fluorimeter instruments. Organization and entry of field data in Excel. QA/QC of data in SAS. Managing lab intern schedules to ensure finalization of data

PROFESSIONAL SERVICE & MEMBERSHIPS

2021-Present American Fisheries Society (AFS)

President Elect – American Fisheries Society Equal Opportunity Section

2023-Present Society of Environmental Toxicology and Chemistry (SETAC)

2022-Present Journal Manuscript Review:

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Ecology of Freshwater Fish (1) and North American Journal of Fisheries Management (1)

RELEVANT SKILLS

In Lab

- Flow Injection Analysis of chloride, sulfate, ammonia, nitrate-nitrite, total nitrogen, and total phosphorous
- Inductively coupled plasma optical emission spectroscopy of metals in surface waters across Colorado
- High Performance Liquid Chromatography analyses
- WET chemistry
- Water Quality Analyses
- Critical Thermal maxima and dissolved oxygen minima fish experiments

In the Field

- Fish ID of all Colorado cold and warmwater stream fish
- Use of seine and dip nets for fish sampling
- Operation and use of Smith-Root backpack and barge electrofishers
- Leadership of freshwater stream fish sampling crews
- Identifying species of freshwater macroinvertebrates, fish, and cyanobacteria
- Instrument deployment and monitoring
- Spectrofluorometric analysis of algal communities
- HPLC on-site monitoring of toxicants including rotenone
- Use of ArcGIS collector and GPS navigation
- Identification of agricultural pests and exotic plant diseases

Computer Skills

- Statistical software (R, JAGS, WinBUGS, Python, PyFCM)
- Analyzing and managing data with proficiency in Excel
- Managing complex and large temporal datasets
- Use of MATLAB to create depth profiles for lakes

Languages

- Fluent in English
- Conversational proficiency in Spanish