

Kenneth W. Zillig

1710 Alameda Ave, Davis, CA 95616

Phone: (630) 512-7508

kwzillig@ucdavis.edu

EDUCATION

Ph.D. Candidate, **University of California, Davis**, Davis, CA 95616
Current GPA: 4.0/4.0

2015 – Present

B.A. Biology, Magna Cum Laude, **Carleton College**, Northfield, MN
Cumulative GPA: 3.72/4.0

2009 – 2013

RESEARCH INTERESTS

- Interpopulation variation and thermal performance of threatened or endangered fish species
- Scaling bioenergetics and physiology beyond the organism to understand ecosystem dynamics
- Physiological responses of Antarctic fish to ocean warming and acidification

EXPERIENCE WITH DECISION MAKERS

Ph.D. Candidate, Fangue Lab, University of California, Davis, California Sept. 2015 – Present

- Met with tribal resource stewards of the Yurok tribe to acquire green sturgeon and build mentoring relationship with young tribe members.
- Built relationships with EPA, NOAA and hatchery managers to gather permits and acquire endangered strains of salmon.
- Collaborated with the California Water Board to write a report on variation in thermal performance observed within salmonids and its relevance to Central Valley water projects.

Graduate Student Researcher, B-207-M, McMurdo Station, Antarctica Sept. 2018 – Dec. 2018

- Guided tours for ‘distinguished visitors’ which included military generals and leaders of foreign political parties
- Presented research to NSF officials and explained the value of the U.S. Antarctic program to physiological research.

RESEARCH EXPERIENCE

Ph.D. Candidate, Fangue Lab, University of California, Davis, California Sept. 2015 – Present

- Designed and conducted aerobic scope and specific dynamic action experiments on Chinook salmon and green sturgeon
- Developed novel methodology for measuring Specific Dynamic Action in sturgeon
- Constructed a 36 tank system for husbandry and experimentation of aquatic fish species including green sturgeon and salmonids
- Cared for and maintained experimental conditions for thousands of fish
- Collaborating with California Water Board to author a review of thermal tolerance among salmon populations in California

Graduate Student Researcher, B-207-M, McMurdo Station, Antarctica Sept. 2018 – Dec. 2018

- Set up and maintained a CO₂ system to mix and deliver gas to a custom aquarium system
- Designed and conducted the first temperature preference experiments ever conducted on Antarctic fish
- Conducted novel tank and novel object behavioral experiments on multiple species

- Assisted in metabolic experiments on juvenile Antarctic fish

Junior Specialist, Strauss Lab, University of California, Davis, California Sept. 2013 – Aug. 2015

- Aided with design and implementation of experiments pertaining to the *Trifolium* Coexistence project of Dr. Sharon Strauss
- Responsible for design and analysis of independent experiment studying the coexistence of native *Trifolium* species
- Independently collected field data from field sites at Bodega Marine Reserve and appended data to long-term data set
- Collaborated with Dr. Andrew Siefert to develop a 1600 plant field experiment testing coexistence
- Designed and maintained a 3000 plant greenhouse experiment elucidating the effects of community composition on competition between *Trifolium*

California Fisheries Fund Intern, San Francisco, California Mar. 2013 – April 2013

- Completed personal project determining differences between Catch Shares and traditional fishery management methods
- Analyzed data from governmental organizations to produce a report exploring the impact of California Fisheries Fund loans
- Composed a formal report discussing the practice of high-grading and its influence on discard rates of Pacific sablefish (*Anoplopoma fimbria*)

Melanoma Oncology Lab, MD Anderson Cancer Center, Houston, Texas Jun. 2012 – Aug. 2012

- Conducted research investigating the efficacy of Melanoma Vaccine modifications
- Comfortable in using laboratory equipment as well as flow cytometry and FACS machines
- Proficient at working with live mice, collecting blood, administering injections and general animal care

Australia Field Studies, Carleton College Off-Campus Program Jan. 2012 – Mar. 2012

- Performed a series of small ecology based research projects on both marine and terrestrial environments
- Comfortable in using techniques such as quadrats and transects, as well as statistics, to analyze ecological data
- Presented results of all research projects in presentations to my professors and classmates

TEACHING EXPERIENCE

Teaching Assistant, University of California, Davis Winter 2016
Physiological Ecology of Wildlife (WFC 130)

Lab Instructor, University of California, Davis Fall 2016
Biology and Conservation of Fishes (WFC 120L)

Teaching Assistant, University of California, Davis Fall 2015, Spring 2016, Fall 2019
Wildlife Ecology and Conservation (WFC 010)

UNIVERSITY SERVICE

Chapter President June 2017 – June 2019
Society of Conservation Biology, Davis Chapter
University of California, Davis

- Ongoing project producing videos for middle school students on ‘being a scientist’, highlighting researchers from diverse backgrounds
- Coordinated the 18th Bay Area Conservation Biology Symposium with panel discussion on translating science

- Shared knowledge and enthusiasm for fish biology with elementary school students during UC Davis' Biodiversity Day

Treasury Officer

Oct 2015 – Jun 2017

Society of Conservation Biology, Davis Chapter
University of California, Davis

- Organized a non-academic career panel to highlight career paths outside academia for graduate or undergraduate students interested in obtaining a Ph.D.
- Developed annual silent auction art fundraiser that highlights conservation artists from UC Davis

Graduate Student Peer Mentor

Sept 2015 – June 2016

Graduate Student Peer Mentorship Program
University of California, Davis

Graduate Student Mentor

Sept 2013 – Oct. 2015

Strategies for Ecology Education, Diversity and Sustainability (SEEDS)
University of California, Davis

REVIEWED PUBLICATIONS

Nature Climate Change – 2020

Integrative Zoology – 2019

AWARDS

Henry A. Jastro Research Fellowship – University of California, Davis. 2020

Horodas Grant – University of California, Davis. 2019

Henry A. Jastro Research Fellowship – University of California, Davis. 2018

Graduate Group in Ecology Fellowship – University of California, Davis. 2017

Henry A. Jastro Research Fellowship – University of California, Davis. 2017

Marin Rod & Gun Club Scholarship – University of California, Davis. 2016

Ecology Student Endowment Award – University of California, Davis. 2016

Awarded distinction on senior thesis: *Mother Nature in Australia with a Dry Spell: How Climate Change caused the Australian Megafauna Extinction Event*. 2013

Danish Intercultural Leadership Award – Danish Institute for Study Abroad. 2011

Eagle Scout, Boy Scouts of America Troop 78, Elmhurst, IL.

PUBLICATIONS

* Undergraduate Author

Zillig, K.W., Lusardi, R.A., Moyle, P., Fangue, N.A. (2021). One-size does not fit all: variation in thermal eco-physiology among Pacific salmonids. *Reviews in Fisheries and Fish Biology*.

Zillig, K.W., Cocherell, D.E., Baird, S.E., Nguyen, T.X., Poletto, J.B., Todgham, A.E., and Fangue, N.A. The effect of feed restriction and acclimation temperature on aerobic metabolism in green sturgeon, *Acipenser Medirostris*. *In prep*.

Dai, J.*, Degtyarev, D.*, Gao, J.*, Wang, A.*, Burman, S., **Zillig, K.**, & Ghosal, D. (2020). Design and Implementation of RAP - a Randomized Asynchronous Protocol for Data Aggregation in Wireless Sensor Networks. In 2020 International Conference on Computing, Networking and Communications (ICNC) pp. 980–986 Big Island, HI, USA: IEEE.

Hansen, M. J., Ligocki, I. Y., **Zillig, K. W.**, Steel, A. E., Todgham, A. E., & Fangue, N. A. (2020). Risk-Taking and Locomotion in Foraging Threespine Sticklebacks (*Gasterosteus Aculeatus*): The Effect of Nutritional Stress Is Dependent on Social Context. *Behavioral Ecology and Sociobiology*, 74, 12.

Zillig, K. W., Cocherell, D. E., & Fangue, N. A. (2020). *Interpopulation Variation among Juvenile Chinook Salmon from California and Oregon*. San Francisco, CA: The United States Environmental Protection Agency Region 9 - Pacific Southwest Region.

Siefert, A., **Zillig, K.W.,** Friesen, M.L., and Strauss, S.Y. 2019. Mutualists stabilize coexistence of congeneric legumes. *American Naturalist*. 193:2 200-2012.

Zillig, K. W., Lusardi, R. A., & Fangue, N. A. (2018). *Variation in Thermal Eco-Physiology among California Salmonids: Implications for Management*. Sacramento, California: California State Water Resources Control Board. 39.

Siefert, A., **Zillig, K.W.,** Friesen, M.L., and Strauss, S.Y. 2018. Soil microbial communities alter conspecific and congeneric competition consistent with patterns of field coexistence in three *Trifolium* congeners. *Journal of Ecology* 106:5 1876–1891

SCIENTIFIC PRESENTATIONS

* Undergraduate Author

Zillig, K.W., Lusardi, R. A., Cocherell, D.E., and Fangue, N.A. 2021. Physiological variation in thermal traits among eight populations of Chinook salmon from the West Coast. Bay-Delta Science Conference.

†Awarded 2nd Prize for a Contributed Talk

Zillig, K.W., Lusardi, R. A., Cocherell, D.E., and Fangue, N.A. 2020. Intraspecific variation in thermal physiology of West-Coast Chinook salmon. Ecological Society of America. Virtual Conference.

Zillig, K.W., Lusardi, R. A., Cocherell, D.E., and Fangue, N.A. 2019. Eco-physiological patterns in thermal performance among populations of Chinook salmon, *Oncorhynchus tshawytscha*. American Fisheries Society Conference. Reno, NV.

Zillig, K.W., Lusardi, R. A., Cocherell, D.E., and Fangue, N.A. 2018. Differences in thermal performance between populations of Chinook salmon, *Oncorhynchus tshawytscha*. Bay-Delta Science Conference, Sacramento, CA.

Zillig, K.W., Lusardi, R. A., Cocherell, D.E., and Fangue, N.A. 2018. Interpopulation variation in the thermal performance of Chinook salmon, *Oncorhynchus tshawytscha*. International Congress on the Biology of Fishes. Calgary, AB.

Zillig, K.W.* 2013. Mother Nature in Australia with a Dry Spell: How Climate Change caused the Australian Megafauna Extinction Event. Senior Thesis Presentation, Carleton College. Northfield, MN

Zillig, K.W.*, Dai, Z., Xue-fei, H. and W. Overwijk. 2012. Addition of anti-VEGF shows no positive or negative synergistic effects against melanoma tumor when combined with covax vaccine. CPRIT Internship Program Presentation, MD Anderson Cancer Center. Houston, TX

POSTER PRESENTATIONS

* Undergraduate Author

Zillig, K.W., McInturf, A.G., Burman, S.G., and N.A. Fangue. 2021. Disco-dash, a DIY laser timed system for measuring burst performance in fish. Society for Experimental Biology. Virtual Conference.

†Awarded 2nd Prize for Poster Presentation

Zillig, K.W., McInturf, A.G., Burman, S.G., and N.A. Fangue. 2021. Development of a laser-timed swim tunnel for measuring anaerobic swim performance across species. Bay-Delta Science Conference.

Zillig, K.W., Todgham, A. E., Baird S.E., Nguyen T.X., Cocherell D.E., and N.A. Fangue. 2019. The effect of feed restriction and acclimation temperature on aerobic metabolism in green sturgeon, *Acipenser medirostris*. American Fisheries Society Conference. Reno, Nevada.

Bell, H.*, **Zillig K.W.,** Cocherell D.E., Steel A.E., Todgham A.E., Fangue N.A. How does prior thermal experience affect subsequent thermal tolerance in Chinook salmon?" American Fisheries Society/The Wildlife Society Joint Conference, Reno, Nevada.

Zillig, K.W., Todgham, A. E., Baird S.E., Nguyen T.X., Cocherell D.E., and N.A. Fangue. 2018. The effect of feed restriction and acclimation temperature on aerobic metabolism in green sturgeon, *Acipenser medirostris*. Bay-Delta Conference. Sacramento, California.

Bell, H.*, **Zillig K.W.,** Cocherell D.E., Steel A.E., Todgham A.E., Fangue N.A. "Thermal acclimation and heat hardening's effect on thermal tolerance in Chinook salmon populations from California and Oregon." Salmonid Restoration Federation, Santa Rosa, California.