Kenneth W. Zillig

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**EDUCATION**

Ph.D. Candidate, **University of California, Davis**, Davis, CA 95616 2015 – Present

Current GPA: 4.0/4.0

B.A. Biology, Magna Cum Laude, **Carleton College**, Northfield, MN 2009 – 2013

Cumulative GPA: 3.72/4.0

**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 (*Anoplopma 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, DavisWinter 2016

Physiological Ecology of Wildlife (WFC 130)

**Lab Instructor,** University of California, DavisFall 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 Califorinia 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.