

**KATHY S. WILLIAMS**  
Professor Emerita, Ecology Program Area  
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## I. PROFESSIONAL PREPARATION

### A. Education

University of Texas at Austin, B.A. in Liberal Arts/Ecology, 1972-1977

Stanford University, Ph.D. in Population Biology, 1977-1981

Postdoctoral Fellow, 1981-1984, Univ. of British Columbia, Inst. of Animal Resource Ecology

**B. Title of Dissertation.** The coevolution of *Euphydryas chalcedona* butterflies and their larval host plants.  
Committee: Drs. P. R. Ehrlich, advisor, H. A. Mooney, R. W. Holm, J. Roughgarden.

## II. ACADEMIC APPOINTMENTS

San Diego State University

Professor Emerita, Biology/Ecology Program	2017-present
Professor, Biology/Ecology Program	2014-2017
Assessment Coordinator, College of Sciences/Dept. of Biology	2014-2017
Director, SDSU Center for Teaching and Learning	2008-2014
Interim Associate Dean of Undergraduate Studies	2012-2013
Member Center for Research in Math and Science Education (CRMSE)	2007-present
Biology Vice-Chair and Undergraduate Advisor	2001-2008
Ecology M.S. Program Coordinator	1993-2000
Associate Professor, Biology/Ecology Program	1992-2014
Assistant Professor, Biology/Ecology Program	1987-1992
University of Arkansas      Research Asst. Professor, Zoology	1984-1987
Univ. of British Columbia, Inst. Animal Resource Ecology      Postdoctoral Fellow	1981-1984

## III. TEACHING EFFECTIVENESS

**A. Student Supervision.** I have supervised over 175 undergraduates in my lab at SDSU (names and project titles available on request).

### Post-doctoral Student Advising.

Erilynn Heinrichsen (UCSD IRACDA Fellow) collaborated on NSF-funded conceptual assessment research. In addition I mentored 40 post-docs (10 closely) through NSF-funded Project FIRST IV.

### Ph.D. Advising

Makenna Martin is a Mathematics and Science Education Ph.D candidate (dissertation advisor, D. Thoman).  
Committee member (2022-present).

Hyejeong Choi is a Chemistry Ph.D candidate (dissertation advisor, D. Smith). Committee member (2018-2020).

J. Brooke Ernest is a Mathematics and Science Education Ph.D candidate (dissertation advisor, R. Nemorovsky). Held funded graduate research position on my research project PLURIS (2013-2014).

Jennifer E. Lineback was a Mathematics and Science Education Ph.D candidate (dissertation advisor F. Goldberg). Held graduate research position on my Concept Assessment (CAB) project, using diagnostic question clusters to inform curriculum design (Fall 2009-Spring 2011).

Alison E. Williams-Anderson. Effects of whole-ecosystem atmospheric carbon dioxide concentration manipulation on abundance and species diversity of arthropods in a post-fire chaparral community. Ph.D. UCD/SDSU Chair (1995-2000).

**M.S. Advising** (plus 14 others)

Hanna Sadowski. Fall 2015. There and back again: A temporal analysis of restored riparian woodlands.

B. Clark Austin. Spring 2014. The Reproductive Biology of the Rare Shrub *Fremontodendron mexicanum*.

Christina Congedo. Fall 2011. The relationship of the Thorne's Hairstreak butterfly (*Lycaenidae: Callophrys [Mitoura] grynea thornei*) with its host plant, Tecate cypress (*Hesperocyparis forbesii*). M.S. SDSU. Chair

Christina Burnett. 2009. Effects of anthropogenic disturbance on the spatial distribution of butterflies in urban parks. M.S. SDSU. Chair

Michael J. Wellik. 2009. Population genetics of the checkerspot butterfly, *Euphydryas chalcedona* (Lepidoptera: Nymphalidae) and implications for conservation. M.S. SDSU. Chair

Cantherine M. Yamada. 2007. Implications of environmental enrichment for the Pygmy Loris, *Nycticebus pygmaeus*. M.S. SDSU. Chair

David C. Bailey. 2006. The community characteristics of *Horkelia clevelandii* and implications for the endangered Laguna Mountains Skipper (*Pyrgus ruralis lagunae*). M.S. SDSU. Chair

Patrick O. McConnell. 2006. Effects of herbivory by *Opsius stactogalus* Fieber and edaphic factors on growth and resource allocation in Tamarix. M.S. SDSU. Chair

**Ph.D. Dissertation Committee member** of 5 other PhD candidates since 1988.

**Master's Thesis Committee member** of 18 students since 1988.

**B. Courses Taught**

BIOL 201/204 Princ. of Organismal Biol (Invertebrate Biol. section)

BIOL 354 Ecology and Evolution (PopEcol and Evol. sections)

BIOL 354 Ecology and the Environment (Population Ecol and Communities & Ecosystems sections)

BIOL 452 Biology Concept Development and Integration

BIOL 462 Entomology & BIOL 462L Entomology Lab

BIOL 506A Coevolution

BIOL 506B Insect Ecology (with Lab)

BIOL 600 Biology Teaching Colloquium

GS 100B Univ. Seminar

**C. Instructional Leadership (selected)**

Appointed to Senate Student Learning Outcomes/Program Assessment Committee. (2008-2017; chaired 2012-2014) As College of Sciences representative, I meet with other college representatives to plan and implement university-wide expectations and support for program assessment responsibilities. I then disseminate that information to faculty in my college and assist them in achieving expected outcomes.

Appointed as Biology Department Assessment Coordinator. (2014-present) As College of Sciences representative, I am responsible for assisting faculty curriculum committees and reporting program assessment activities to the university. This includes meeting with faculty groups, holding workshops, and liaising with college and university stakeholders.

Appointed by the Dean to assist academic programs with Program Assessment across the College of Sciences (2014-present) As College of Sciences assessment coordinator, I advise and work closely with each department's assessment and curriculum committees to help them develop and report their program assessment activities to the university.

**D. Science Education Working Groups to enhance learning, assessment, & curriculum (selected)**

**Organizer RCN-UBE Summit meeting.** Helped plan summit meeting of RCN-UBE PIs and Senior Personnel in early 2016, and contributed to proposal to NSF (Gordon Uno, PI; KSW co-PI with others). Met with NSF Program Officers and plan national meeting, NSF, Alexandria, VA, Jan 29-30, 2015.

**Board Member Biology Directors Consortium (BDC).** 2008-present. I am an executive board member of this consortium that is a community of faculty and administrators who share common interests around the management and administration of undergraduate Biology teaching and learning. Two broad foci of the BDC are 1) the theory and practice of teaching and learning, particularly as it relates to the introductory and the core courses and experiences of students; and 2) the management of instructional programs, including assessment, staffing, budgeting, space management, and related administrative functions. Our mission is to facilitate communication and interaction that promotes excellence in life science education. <http://biodirectors.org/>

**Organized Concept Inventory Working Group Meeting.** 2014. Organized and conducted two meetings of over 60 users and developers of Conceptual Assessment in Biology (CABs) in conjunction with the Society for the Advancement of Biology Education Research (SABER) meeting, University of Minnesota, MN, July 17-20, 2014.

**Team Leader, Project FIRST.** 1998-2014. This NSF funded project has used field stations at SDSU (CA), and 11 other states as resources for institutionalizing inquiry-based science education. I led a team of faculty at SDSU and local colleges who, with other teams of US science educators work to improve college science education and provide faculty development in science education. Our goal is to promote more meaningful learning by students in biology classes and to increase the value of the Biological Field Stations as educational resources. This is now a national dissemination project (NSF CCLI - Phase III; 2009-2012, D. Ebert-May [PI], Terry Derting [co-PI]) and provides professional development in teaching and learning to postdoctoral scholars planning careers in academia or other educational roles, establishes a regional support network for postdoctoral scholars in teaching/learning, and collaborates to advance teaching and scholarship in education. Postdocs leave the program with a complete intro biology course designed based on the principles of scientific teaching.

**Organizer Biology Directors Consortium (BDC) First National Meeting.** 2013. Helped organize and conduct first national BDC meeting in conjunction with the National Association of Biology Teachers Annual meeting, Atlanta, GA, Nov. 21-24, 2013.

**Consultant to NSF/DUE/CCLI award, “Diagnostic Question Clusters to Improve Student Reasoning and Understanding in General Biology Courses.”** 2008-2011. Multi-investigator project to develop diagnostic questions on energy/matter transformation spanning cellular to ecosystem levels. PI - C. D’Avanzo, Hampshire College. Served as consultant on this national faculty development project to enhance post-secondary science education using conceptual assessments for formative and summative assessment to improve learning.

**Member Concept Inventory National Meeting III.** 2012. Developers’ Advisory Board member. Third annual National Science Foundation-sponsored *National Meeting on STEM (Science, Technology, Engineering, and Mathematics) Concept Inventories*. This one and a half day meeting fostered collaborations towards the future use and refinement of Concept Inventories (CIs) through the continued creation and growth of a virtual community of CI developers, researchers, faculty and students. Aug. 8-9, 2012. Alexandria, VA.

**Conceptual Assessment in Biology Meeting II.** 2008. NSF/DUE 0633351. (PI: S. Elrod, Cal Poly, San Luis Obispo), Organizing Committee: S.Elrod (PI), M.L. Casem and B.Hoese, J.Michael, **K.S. Williams**, Asilomar, CA, Jan. 2008.

**Conceptual Assessment in Biology Meeting I,** March 2007. NSF-funded meeting designed to bring together the small group of researchers to begin a discussion of the “big ideas” in biology undergraduate education, within the context of their designing effective mechanisms for assessing conceptual understanding in biology (i.e., concept inventories). Boulder, CO.

**Introductory Biology Project.** 2010-2014. I have been a major participant in activities of this NSF-funded project (G.Uno, Univ. Oklahoma, PI) that brings together faculty who teach and who are interested in improving introductory biology courses. Through various meeting venues, it promotes beneficial interactions between individuals who need help, those who have some answers, and scientific societies that can implement the changes that will have lasting, transformative influences in the way biology is taught. <http://ibp.ou.edu/>

*Workshops for SDSU Biology Teaching Assistants*. 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011. Organized and conducted workshops for SDSU Biology TAs (required). Contributed to presentations in 2012-14.

#### IV. PROFESSIONAL GROWTH

##### A. Publications - List of representative articles

Articles in Refereed Journals (\*indicates co-first authors; † M.S. student, †† PhD student; selected items)

- Luque, A., J. Mullinix, M. Anderson, **K.S. Williams**, J. Bowers. **2022**. Aligning Calculus with Life Sciences Disciplines: The Argument for Integrating Statistical Reasoning. **Primus**, 32(2):199-217.
- Bowers, J., **K. Williams**, A. Luque, D. Quick, M. Beisiegel, J. Sorensen, J. Kunz, D. Smith, L. Kayes. **2020**. Paradigms for creating activities that integrate mathematics and science topics. **Journal of Mathematics and Science: Collaborative Explorations** 16(1): 6.
- Bush\*, S.D., M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams**.\* **2020**. Disciplinary bias, money matters, and persistence: Deans' perspectives on science faculty with education specialties (SFES). **CBE—Life Sciences Education**, 19(3), 1-13.
- Piercey, V., R. Segal, A.V. Filippas, T. Chen, S. Kone, R.H. Hargraves, J. Bookman, J. Hearn, D. Pike, **K.S. Williams**. **2020**. Using site visits to strengthen collaboration. **CUNY Academic Works**: [https://academicworks.cuny.edu/lg\\_pubs/149](https://academicworks.cuny.edu/lg_pubs/149). <https://doi.org/10.25891/wpxj-gg40>
- Bush\*, S.D., M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams**.\* ‡ (‡corresponding author) **2019**. Evolving roles of scientists as change agents in science education: SFES roles beyond discipline-based education research. *Science advances*. **Science Advances** 5: eaav6403. 5 June 2019. <https://advances.sciencemag.org/content/5/6/eaav6403>
- Nickerson, S.D., M. Vaughn, L. Lamb, D. Ross, R. Philipp, R. LaRochelle††, **K.S. Williams**. **2018**. A Model for Selecting Exemplary Mathematics and Science Teacher Leaders. **Journal of School Administration Research and Development** 3(1): 67-73. [www.jsard.org/wp-content/uploads/2018/09/JSARD-Summer-2018-final-a-model-for-selecting.pdf](http://www.jsard.org/wp-content/uploads/2018/09/JSARD-Summer-2018-final-a-model-for-selecting.pdf) (accessed 10/12/2023)
- Bush\*, S.D., M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams**.\* **2017**. Origins of Science Faculty with Education Specialties: Hiring motivations and prior connections explain institutional differences in the SFES-phenomenon. **BioScience** 67: 452–463.
- Eaton, C.D., D. Allen, L.J. Anderson, G. Bowser, M.A. Pauley, **K.S. Williams**, and G.E. Uno. **2016**. Summit of the Research Coordination Networks for Undergraduate Biology Education. **CBE-Life Science Education** 15(4) mr1; doi:10.1187/cbe.16-03-0147. Winter 2016.
- Bush\*, S.D., J.A. Rudd II\*, M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams**.\*. **2016**. Fostering change from within: Influencing teaching practices of departmental colleagues by Science Faculty with Education Specialties. **PLoS ONE** 11(3): e0150914. doi:10.1371/journal.pone.0150914.
- Bush\*, S.D., N.J. Pelaez\*, J.A. Rudd II\*, M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams**.\*. **2015**. Misalignments: Challenges in cultivating Science Faculty with Education Specialties in your department. **BioScience** 65(1): 81-89. doi: 10.1093/biosci/biu186.
- Bush\*, S.D., N.J. Pelaez\*, J.A. Rudd II\*, M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams**\* ‡. (‡corresponding author) **2013**. Widespread distribution and unexpected variation among science faculty with education specialties (SFES) across the United States. **Proceedings of the National Academy of Sciences (PNAS)** 110 (18): 7170–7175. Article was also the subject of Feature Current Insights Recent Research in Science Teaching and Learning in **CBE—Life Sciences Education** Vol. 12, 332–335, Fall 2013.
- Bush\*, S.D., N.J. Pelaez\*, J.A. Rudd\*, M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams**.\*. **2011**. Investigation of Science Faculty with Education Specialties (SFES) within the Largest University System in the United States. **CBE—Life Sciences Education**.10(1): 25-42. Also appeared in CBE-Life Sciences Education Highlights of 2011 special edition, pp. 86-103, and named by journal **Science** (vol 332:14; 4/1/2011) as Editors' Choice: Highlights of Recent Literature.

- Derting, T., **K.S. Williams**, J.L. Momsen, T.P. Henkel. **2011**. Education Research: Set a High Bar. **Science** 333 (2 September 2011): 1220-1221.
- Fisher, K.M., **K.S. Williams**, J.E. Lineback††. **2011**. Osmosis and diffusion conceptual assessment. **CBE—Life Sciences Education** 10 (4): 418-29. Winter 2011.
- Bush\*, S.D., N.J. Pelaez\*, J.A. Rudd\*, M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams\***, W.B. Wood\*. **2010**. A Role for Postdocs in Undergraduate Education. **Science** 327 (29 January 2010): 522-523.
- Bush\*, S.D., N.J. Pelaez\*, J.A. Rudd\*, M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams\***. **2008**. Science Faculty with Education Specialties. **Science** 322 (19 Dec 2008): 1795-1796.
- Bush S.D., N.J. Pelaez, J.A. Rudd, M.T. Stevens, **K.S. Williams**, D.E. Allen, and K.D. Tanner. **2006**. On hiring science faculty with education specialties for your science (not education) department. **CBE Life Sciences Education** 5: 297–305.
- Hodder, J., D. Ebert-May, **K. Williams**, D. Luckie. **2005**. Unraveling complexity: building an understanding of Everglades restoration. **Frontiers in Ecology and the Environment** 3(7):170-171.
- Ebert-May D, **K. Williams**, E.P. Weber, J. Hodder, and D. Luckie. **2004**. Practicing scientific inquiry: what are the rules? **Frontiers in Ecology and the Environment** 2(9):492-493.
- Ebert-May, D., **K. Williams**, D. Luckie, J. Hodder. **2004**. Climate change: confronting student ideas. **Frontiers in Ecology and the Environment** 2(6): 324-325.
- Williams, K.**, D.Ebert-May, D. Luckie, J. Hodder, S. Koptur. **2004**. Novel assessments: detecting success in student learning. **Frontiers in Ecology and the Environment** 2(8): 444-445.
- Williams, K. S.**, D. Ebert-May, D. Luckie, J. Hodder. **2004**. Ecological controversy: analysis to synthesis. **Frontiers in Ecology and the Environment** 2(10):546-547.
- Hodder, J., D. Ebert-May, **K. Williams**, D. Luckie. **2004**. Marine pathology: revealing the ocean's etiology to earthbound students. **Frontiers in Ecology and the Environment** 2(7): 383-384.
- Ebert-May, D., J. Hodder, **K. Williams**, D. Luckie. **2004**. Pathways to scientific teaching. **Frontiers in Ecology and the Environment** 2(6): 323.
- Williams, K. S.** **2000**. Teaching and Learning with EcoBeaker 2.0, **Ecology** 81(4), p. 1173.
- Williams, K. S.** **1997**. 12 Terrestrial arthropods as ecological indicators of habitat restoration in southwestern North America, **Restoration Ecology and Sustainable Development**, pp. 238.
- Williams, K.S.** and C. Simon. **1995**. The ecology, behavior, and evolution of periodical cicadas. **Annual Review of Entomology** 40:269-295.
- Williams, K.S.** **1993**. Use of terrestrial arthropods to evaluate restored riparian woodlands. **Restoration Ecology** 2: 107-116.
- Williams, K.S.**, K.G. Smith, and F.M. Stephen. **1993**. Emergence of 13-year periodical cicadas (Cicadidae: *Magicicada*): Phenology, mortality, and predator satiation. **Ecology** 74:1143-1152.
- Wheeler, G.L., **K.S. Williams**, and K.G. Smith. **1992**. Role of periodical cicadas (Homoptera: Cicadidae: *Magicicada*) in forest nutrient cycles. **Forest Ecology and Management** 51: 339-346.
- Williams, K.S.** and K.G. Smith. **1991**. Dynamics of periodical cicada chorus centers (Homoptera: Cicadidae: *Magicicada*). **Journal of Insect Behavior** 4 (3): 275-291.
- Williams, K.S.** **1987**. Responses of persimmon trees to periodical cicada oviposition damage. In *Insects—Plants: Proceedings of the 6th International Symposium on Insect–Plant Relationships*. Edited by V. Labeyrie, G. Fabres, and D. Lachaise. Dr. W. Junk Publishers, Dordrecht, the Netherlands (pp. 424-425).
- Myers, J.H. and **K.S. Williams**. **1987**. Lack of short or long term inducible defenses in the red alder-western tent caterpillar system. **Oikos** 48:73-78.
- Smith, K.G., N.C. Wilkinson†, **K.S. Williams**, V.B. Steward†. **1987**. Predation by spiders on periodical cicadas (Homoptera, *Magicicada*). **Journal of Arachnology** 15: 277-279.
- Johnson, N.D. **K.S. Williams**, P.R. Ehrlich. **1987**. Effects of chemical fertilization of *Diplacus aurantiacus* on the development and persistence of the post-diapause larvae of its lepidopteran herbivore, *Euphydryas chalcedona*. **American Midland Naturalist** 117: 435-438.
- Myers, J.H. and **K.S. Williams**. **1984**. Does tent caterpillar attack reduce the food quality of red alder foliage? **Oecologia** 62: 74-79.

- Williams, K.S.** and J.H. Myers. **1984**. Previous herbivore attack of red alder may improve food quality for fall webworm larvae. *Oecologia* 63: 166-170.
- Williams, K.S.** **1983**. The coevolution of *Euphydryas chalcedona* butterflies and their larval host plants. III. Oviposition behavior and host plant quality. *Oecologia* 56: 336-340.
- Williams, K.S.**, D.E. Lincoln, P.R. Ehrlich. **1983**. The coevolution of *Euphydryas chalcedona* butterflies and their larval host plants. II. Maternal and host plant effects on larval growth, development, and food-use efficiency. *Oecologia* 56: 330-335.
- Williams, K.S.**, D.E. Lincoln, P.R. Ehrlich. **1983**. The coevolution of *Euphydryas chalcedona* butterflies and their larval host plants. I. Larval feeding behavior and host plant quality. *Oecologia* 56: 323-329.
- Lincoln, D.E., T.S. Newton, P.R. Ehrlich, **K.S. Williams**. 1982. Coevolution of the checkerspot butterfly *Euphydryas chalcedona* and its larval food plant *Diplacus aurantiacus*: Larval response to protein and leaf resin. *Oecologia* 52: 216-223.
- Williams, K.S.** and L.E. Gilbert. **1981**. Insects as selective agents of natural selection on plant vegetative morphology: Egg mimics of *Passiflora* reduce egg-laying by *Heliconius* butterflies. *Science* 212: 467-469.
- Mooney, H.A., **K.S. Williams**, D.E. Lincoln, P.R. Ehrlich. **1981**. Temporal and spatial variability in the interaction between the checkerspot butterfly, *Euphydryas chalcedona*, and its principal food source, the California shrub, *Diplacus aurantiacus*. *Oecologia* 50: 195-198.
- Mooney, H.A., P.R. Ehrlich, D.E. Lincoln, **K.S. Williams**. **1980**. Environmental controls on the seasonality of a drought deciduous shrub, *Diplacus aurantiacus*, and its predator, the checkerspot butterfly, *Euphydryas chalcedona*. *Oecologia* 45: 143-146.

#### Chapters in Refereed Books (selected)

- Hannon, L.E., L. Ries, **K.S. Williams**. 2009. Terrestrial Arthropod Communities along the San Pedro: Three Case Studies. pp. 127-152. In "Ecology and Conservation of the San Pedro River." J. Stromberg and B. Tellman, eds. The University of Arizona Press.
- Ebert-May, D., **K. Williams**, D. Luckie, J. Hodder. 2008. Climate change: confronting student ideas. Pp. 21-22. In "Pathways to Scientific Teaching." Chapter 2. Diane Ebert-May and Janet Hodder, eds. Sinauer Associates, Sunderland, MA. 212 p.
- Williams, K. S.**, D. Ebert-May, D. Luckie, J. Hodder. 2008. Ecological controversy: analysis to synthesis. Pp. 59-60. In *Pathways to Scientific Teaching*. Chapter 3. Diane Ebert-May and Janet Hodder, eds. Sinauer Associates, Sunderland, MA. 212 p.
- Williams, K.**, D. Ebert-May, D. Luckie, J. Hodder, S. Koptur. 2008. Novel assessments: detecting success in student learning. Pp.115-116. In *Pathways to Scientific Teaching*. Chapter 5. Diane Ebert-May and Janet Hodder, eds. Sinauer Associates, Sunderland, MA. 212 p.
- Noss, R.F., P. Beier, R. Fisher, B. Foster, J. D. Opdycke, E. Rubin, D. Stokes, and **K. S. Williams**. 2006. Report of the Independent Science Advisors on the San Diego East County MSCP (NCCP/HCP) Part I: Recommendations Following the Workshop, February 2-3, 2006 Reed F. Noss (Lead Advisor). California Department of Fish and Game, 27 pp.

#### Articles in Refereed Proceedings (\*speaker; ♠ undergraduate, † M.S., †† PhD student, ††† post-doc; selected)

- Williams, K. S.\***, J. Bowers, A. Luque, M. Anderson. 2020. Calculus for ecology?: Identifying quantitative skills applied in the biology curriculum. Paper presented at the 105th Ecological Society of America Annual Meeting. August 3-6, 2020.  
[<https://programarchives.z20.web.core.windows.net/2020/Paper87276.html> accessed 3/19/2022]
- Williams, K. S.\*** 2019. Conceptual assessments in biology – A decade after the first workshop, what's the status now? Paper presented at the Society for the Advancement of Biology Education Research (SABER) West Meeting. Univ. of California Irvine, CA. Jan. 19-20, 2019.  
[<https://drive.google.com/file/d/1n517gtqPyjU14Am1bElp47C4ZBUBdRnv/view> page 43 accessed 3/17/2022]

- Williams, K. S.\***, J. Bowers, A. Luque, M. Anderson. 2018. From cells to ecosystems: Integrating calculus & statistics throughout biology major's curriculum. Paper presented at the 103rd Ecological Society of America Annual Meeting. August 8, 2018.  
[<https://eco.confex.com/eco/2018/meetingapp.cgi/Paper/74279> accessed 10/17/23]
- Williams, K. S.\*** 2018. An introduction to science education research. Seminar for IRACDA (Institutional Research and Academic Career Development) Fellows. University of California San Diego. San Diego, CA. Feb. 8, 2018.
- Williams, K. S.\***, J. Bowers, A. Luque, M. Anderson. 2018. Quantitative reasoning for all: Integrating calculus and statistics in the biology curriculum. Paper presented at the Society for the Advancement of Biology Education Research (SABER) West Meeting. Univ. of California Irvine, CA. Jan. 14-17, 2018.  
[<https://drive.google.com/file/d/1-DTthuyoKHeGwpZNMkq4ty3FU2AaG4F8/view> page 20 accessed 10/17/18]
- Williams, K. S.\***, S. D. Bush, M.T. Stevens, K.D. Tanner. 2017. Investigating SFES- Science Faculty with Education Specialties- across the CSU and the United States. Invited talk The California State University 2017 CSU STEMNet Conference. Crowne Plaza Los Angeles International Airport, Los Angeles, CA. August 10-11, 2017.
- Williams, K. S.\***, S.D. Bush, N. Pelaez, J.A Rudd, M.T. Stevens, K.D. Tanner. 2016. Fostering change from within: Science Faculty with Education Specialties (SFES) influence teaching practices of departmental colleagues. Paper presented at the SABER: Society for the Advancement of Biology Education Research Meeting. Univ. Minnesota, Twin Cities, MN. July 14-17, 2016.
- Williams, K. S.\*** and B S. Allen. 2016. Building learning agendas and evaluating undergraduate research accomplishments using PLURIS (Purposeful Learning in Undergraduate Research and Independent Studies). Paper presented at the SABER: Society for the Advancement of Biology Education Research Meeting. Univ. Minnesota, Twin Cities, MN. July 14-17, 2016.
- Williams, K.S.\*** and Brock S. Allen. 2016. Managing the load and maximizing the gains for all: Project PLURIS (Purposeful Learning in Undergraduate Research and Independent Studies). Envisioning the Future of Undergraduate STEM Education (EnFUSE) Symposium, Meeting sponsored by NSF/AAAS, Washington DC. Apr 27-29, 2016. **Invited Paper** in Session on Supporting Authentic Undergraduate Research; Incorporating Research Into Undergraduate Studies.
- Williams, K.S.\***, S.D. Bush, N. Pelaez, J.A Rudd, M.T. Stevens, K.D. Tanner. 2015. Misalignments: Challenges in Cultivating Science Faculty with Education Specialties<sup>[SEP]</sup> across the US. Paper presented at the 100th Ecological Society of America Annual Meeting. Baltimore, MD. August 9-14, 2015.  
<https://eco.confex.com/eco/2015/webprogram/Paper56753.html> (accessed 9/1/22)
- Williams, K.S.\***, D.H. Deutschman, J. Ferguson ♡. 2015. Assessing sensitivity of *Quino* checkerspot butterfly larvae to two common herbicides used for habitat management. Paper presented at the 100th Ecological Society of America Annual Meeting. Baltimore, MD. August 9-14, 2015.  
<http://eco.confex.com/eco/2015/webprogram/Paper56847.html> (accessed 9/1/15)
- Williams, K.S.** and E. Heinrichsen †††. 2015. Conceptual assessments in biology – a systematic review. Paper presented at the SABER: Society for the Advancement of Biology Education Research Meeting. Univ. Minnesota, Twin Cities, MN. July 30-Aug. 1, 2015.
- Williams, K.S.\***, B.S. Allen, S.A. Schellenberg. 2014. Building educational partnerships in the San Diego, CA, region to assess and improve environmental and scientific literacy. Paper presented at the 99th Ecological Society of America Annual Meeting. Sacramento, CA. August 10-15, 2014.  
<http://eco.confex.com/eco/2014/webprogram/Paper45430.html> (accessed 12/3/2022)
- Williams, K.S.\***, B.S. Allen. 2013. Managing the load and maximizing the gains for all: Project PLURIS (Purposeful Learning in Undergraduate Research and Independent Studies). Paper presented at the 98th Ecological Society of America Annual Meeting. Minneapolis, MN. August 4-9, 2013.  
<http://eco.confex.com/eco/2013/webprogram/Paper43993.html> (accessed 9/19/2022)
- Austin, B. Clark †\*, **K.S. Williams**. 2013. The reproductive biology of the rare shrub *Fremontodendron mexicanum*. Paper presented at the 97th Ecological Society of America Annual Meeting. Minneapolis,

- MN. August 4-9, 2013. <http://eco.confex.com/eco/2013/webprogram/Paper44347.html> (accessed 9/19/2022)
- Williams, K.S.\***, S.D. Bush, N.J. Pelaez, J.A. Rudd, M.T. Stevens, K.D. Tanner. 2012. National study of Science Faculty with Education Specialties (SFES) in the US. Paper presented at the 97th Ecological Society of America Annual Meeting. Portland, OR. August 5-10, 2012. <http://eco.confex.com/eco/2012/webprogram/Paper37005.html> (accessed 9/1/22).
- Williams, K.S.\***, K.M. Fisher, J. E. Lineback††. 2012. BioHUB: An Internet HUB for the Conceptual Assessment in Biology (CAB) community. Paper presented at the 97th Ecological Society of America Annual Meeting. Portland, OR. August 5-10, 2012. <http://eco.confex.com/eco/2012/webprogram/Paper38536.html> (accessed 9/1/22).
- Williams, K.S.\***, K.M. Fisher, J. E. Lineback††. 2012. BioHUB: An Internet HUB for the Conceptual Assessment in Biology (CAB) community. Paper presented at the SABER: Society for the Advancement of Biology Education Research Meeting. Univ. Minnesota, Twin Cities, MN. July 12-15, 2012. <http://saber-biologyeducationresearch.wikispaces.com/file/detail/SABERabstracts2012June26.pdf> (accessed 9/1/15).
- Williams, K.S.\***, S.D. Bush, N.J. Pelaez, J.A. Rudd, M.T. Stevens, K.D. Tanner. 2012. National study of Science Faculty with Education Specialties (SFES) in the US. Introductory Biology Project (IBP) Summer 2012 Conference: Implementing Vision and Change at the Introductory Biology Level. AAAS, Washington, DC. June 28 - July 1, 2012. <http://ibp.ou.edu/news/abstracts-oral-presentations> (accessed 9/18/2015)
- Williams, K.S.\***, S.D. Bush, N.J. Pelaez, J.A. Rudd, M.T. Stevens, K.D. Tanner. 2011. Science Faculty with Education Specialties (SFES) within the largest university system in the United States: Highlighting Biology SFES. Paper presented at the 96th Ecological Society of America Annual Meeting. Austin, TX. August 7-12, 2011. <http://eco.confex.com/eco/2011/webprogram/Paper31921.html> (accessed 9/1/22).
- Williams, K.S.\* 2011.** Using diagnostic questions to help students learn concepts related to carbon transformation. Paper presented at the SABER: Society for the Advancement of Biology Education Research Meeting. Univ. Minnesota, Twin Cities, MN. July 29-31, 2011. <http://saber-biologyeducationresearch.wikispaces.com> (accessed 9/1/15).
- Williams, K.S.\***, S.Aurillio††, B.Allen. 2010. Scaling up what works in research experiences. Paper presented at the 95th Ecological Society of America Annual Meeting. August 2, 2010. Pittsburgh, PA. <http://eco.confex.com/eco/2010/techprogram/P24720.HTM> (accessed 9/1/22).
- Bush\*, S.D., N.J. Pelaez\*, J.A. Rudd\*, M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams\*** (all co-first authors listed alphabetically). 2010. Science Faculty with Education Specialties (SFES): Findings from a Cross-Disciplinary Research Study. Symposium S-2117-1658. Proceedings of National Association for Research in Science Teaching (NARST) Annual Meeting. Philadelphia, March 2010.
- D'Avanzo, C.\* , C.W. Anderson, B.Wilke††, **K.S. Williams**, N.Stamp, J.Merrill, A.B. Griffith, L.M. Hartley††, N.J. Pelaez. 2010. Faculty use of Diagnostic Question Clusters (DQCs) and active teaching in ecology and biology courses. Paper presented at the 95th Ecological Society of America Annual Meeting. August 2, 2010. Pittsburgh, PA. <http://eco.confex.com/eco/2010/techprogram/P24671.HTM> (accessed 9/1/22).
- Congedo†\*, C. and **K.S. Williams**. 2009. Thorne's hairstreak and Tecate cypress: New findings about this rare butterfly and its host. Paper presented at the 94th Ecological Society of America Annual Meeting. August 2-7, 2009. Albuquerque, NM. <http://eco.confex.com/eco/2009/techprogram/P18318.HTM> (accessed 9/1/22).
- Wellik†, M., **K.S. Williams\***, A. Bohonak. 2009. Phylogenetic evaluation of subspecies within a variable complex of *Euphydryas* butterflies (Lepidoptera: Nymphalidae) in the southwestern US. Paper presented at the 94th Ecological Society of America Annual Meeting. August 2-7, 2009. Albuquerque, NM. <http://eco.confex.com/eco/2009/techprogram/P20067.HTM> (accessed 9/1/22).
- Williams, K. S.\*** 2009. Using diagnostic questions (DQCs) to help students learn concepts related to photosynthesis. Paper presented at the 94th Ecological Society of America Annual Meeting. August 2-7, 2009. Albuquerque, NM. <http://eco.confex.com/eco/2009/techprogram/P20052.HTM> (accessed 9/1/22).



**Electronic publications (refereed)** (\*indicates co-first authors, † M.S. student, †† PhD student; last 6 yr)

Bush\*, S.D., N.J. Pelaez\*, J.A. Rudd\*, M.T. Stevens\*, K.D. Tanner\*, **K.S. Williams\*** (\*all co-first authors listed alphabetically). 2010. Science Faculty with Education Specialties (SFES): Findings from a Cross-Disciplinary Research Study. Symposium S-2117-1658. Proceedings of National Association for Research in Science Teaching (NARST) Annual Meeting. Philadelphia, March 2010.

**Research Reports to Agencies** († indicates graduate student co-authors; selected)

- Williams, K.S.**, and D.H. Deutschman. 2012. Evaluating the sensitivity of Quino Checkerspot Butterfly (*Euphydryas editha quino*) to two herbicides commonly used for habitat restoration and management. Final Report for Cooperative Endangered Species Conservation Fund (Section 6) Grant #P1082033.
- Williams, K.S.** 2012. Herbicide effects on immature stages of the Quino checkerspot butterfly (*Euphydryas editha quino*). Prepared for California Dept. of Fish and Game, Report #56962A.
- Williams, K.S.** and B.C. Austin†. 2012. Otay Mountain Wilderness Mexican Flannelbush. Annual Report. Prepared for US Bureau of Land Management, Report #55349A.
- Williams, K.S.** and B.C. Austin†. 2011. Otay Mountain Wilderness Mexican Flannelbush. Annual Report. Prepared for US Bureau of Land Management, Report #55349A.
- Williams, K.S.** 2011. Otay Mountain Wilderness Tecate Cypress/Thorne's Hairstreak Butterfly Survey. Annual Report. Prepared for US Bureau of Land Management, Report #55333A.
- Williams, K.S.** and B.C. Austin†. 2010. Otay Mountain Wilderness Mexican Flannelbush. Annual Report. Prepared for US Bureau of Land Management, Report #55349A.
- Williams, K.S.** and C. Congedo†. 2010. Otay Mountain Wilderness Tecate Cypress/Thorne's Hairstreak Butterfly Survey. Annual Report. Prepared for US Bureau of Land Management, Report #55333A.
- Williams, K.S.** and B.C. Austin†. 2009. Otay Mountain Wilderness Mexican Flannelbush. Annual Report. Prepared for US Bureau of Land Management, Report #55349A.
- Williams, K.S.** and C. Congedo†. 2009. Otay Mountain Wilderness Tecate Cypress/Thorne's Hairstreak Butterfly Survey. Annual Report. Prepared for US Bureau of Land Management, Report #55333A.
- Williams, K.S.** 2008. Otay Mountain Wilderness Mexican Flannelbush. Annual Report. Prepared for US Bureau of Land Management, Report #55349A.
- Williams, K.S.** 2008. Otay Mountain Wilderness Tecate Cypress/Thorne's Hairstreak Butterfly Survey. Annual Report. Prepared for US Bureau of Land Management, Report #55333A.
- Williams, K.S.** 2006. Marron Valley Quino checkerspot butterfly (*Euphydryas editha quino*) habitat restoration. Final Report. Prepared for Cal State Department of Fish and Game, Report # P0350009.
- Williams, K.S.** and D. Bailey†. 2005. Laguna Mountains Skipper habitat in Palomar Mountain and Cuyamaca Rancho State Parks. Final Report. Prepared for California Department of Parks and Recreation, Colorado Desert District, Report #C0043051.
- Williams, K.S.** 2005. Endangered Butterfly in Anza-Borrego Desert State Park. California Department of Parks and Recreation # C0243011.
- Williams, K.S.** 2004. Rare Plant Pollinator Inventory. California Department of Parks and Recreation. #C0243013.
- Williams, K.S.** 2001. Habitat characteristics of the endangered Laguna Mountains Skipper (Lepidoptera: *Pyrgus ruralis lagunae*) in Cleveland National Forest. Project Report # OOWRSA0491 to U.S. Forest Service and U.S. Geological Survey- Biological Resources Division.
- Williams, K.S.** 2000. Riparian insect populations along the San Pedro River, Arizona. Intirim report to EPA/NSF/USDA.
- Williams, K.S.** 1999. Riparian insect populations along the San Pedro River, Arizona. Intirim report to EPA/NSF/USDA.
- Williams, K.S.** 1998. Possible effects of inundation on riparian insect communities and food for willow flycatcher. Report to California Subgroup of Scientific Experts, WIFL Recovery Team. Final report.

- Williams, K.S.** 1998. Value of using terrestrial arthropods (insects & spiders) as indicators of ecosystem conditions: Effects of effluent discharge in terrestrial arthropod communities along the Salt, Gila, and Verde Rivers, Arizona. Arizona Water Protection Fund #95-010WPF.
- Williams, K.S.** 1996. Riparian insect populations in restored habitats along the San Diego River, San Diego Co., CA. Publication Number 11C113.C State of California, Dept. of Transportation. 35 p. Final report.
- Williams, K.S.** 1994. Evaluating restoration attempts: Arthropods in restored riparian woodlands. Prepared for Wildlife Society Symposium, 1994, and as interim report for State of California, Dept. of Transportation. 20 p.
- Williams, K.S.** 1993. Riparian insect populations in restored habitats along the San Diego River, San Diego Co., CA, 1993. Publication Num.11C113.15B. California Dept. of Transportation. 24 p.
- Williams, K.S.** 1993. Riparian insect populations in restored and natural habitats along San Luis Rey and San Diego Rivers, San Diego Co., CA, 1992. Publication Num.11C113.15A. State of California, Dept. of Transportation. 33 p.
- Williams, K.S.** 1993. Effects of metam-sodium spill on insect and other arthropod communities along the Sacramento River, Shasta & Siskiyou Counties, CA. California Dept. of Fish and Game Peer Review Management of Natural Resources Damage Assessment (NRDA).
- Williams, K.S.** 1991. Use of Terrestrial Arthropods to Compare Restored and Natural Riparian Habitats in San Diego County. Publication Number 11B351. State of California, Dept. of Transportation.
- Williams, K.S.** 1990. Control of Scale Insect Infestation at Chula Vista Wildlife Reserve. Final Project Report to San Diego Unified Port District # EM81 - 1.30b.
- Williams, K.S.** 1990. Comparison of Riparian Insect Populations in Restored and Natural Habitats. Publication Number 11B351.32 State of California, Dept. of Transportation.
- Williams, K.S., M. Busnardo, D.W. Gibson, K.M. Johnson, S.A. Snover.** 1989. Terrestrial Arthropods of Tijuana Estuary. Prepared for Tijuana Estuary Tidal Restoration and Enhancement Project.
- Williams, K.S. and K.M. Johnson.** 1988. Effects of disturbance and habitat quality on riparian insect communities along the San Diego River. Publication Number 11B351.27. State of California, Dept. of Transportation.

## **B. Funded Research (selected)**

### **Supporting Science and Education Research** (❖ current funds)

- ❖ California State University, Chancellor's Office: Science Faculty with Education Specialties (SFES) in the CSU: A 10-year Retrospective Study. 8/15/17-8/31/24. \$33,102. **K.S. Williams** (senior participant/co-PI) with S. Bush, M. Stevens, K.D. Tanner. Special award provided by the Helmsley Trust, STEM Collaboratives grant #2014PG-EDU036 administered by the California State University, Chancellor's Office. Award is administered by California Polytechnic State University San Luis Obispo.
- NSF/IUSE: Collaborative Research: A National Consortium for Synergistic Undergraduate Mathematics via Multi-institutional Interdisciplinary Teaching Partnership (SUMMIT-P). NSF-1625166. 8/1/16 – 8/31/22. \$160,027. **K.S. Williams** co-PI. J. Bowers PI, with M. Anderson, A. Luque co-PIs.
- NSF/DUE/NOYCE: Supporting Science Teaching: The SDSU Noyce Scholars and Interns Program. NSF/EHR/Noyce. NSF-1439862. 09/01/14- 08/31/21. \$1,199,524. **K.S. Williams** co-PI. L. Lamb PI, with D. Ross, M. Houle Vaughn, D. Pullman co-PIs.
- NSF/DUE/NOYCE: Leading the Future in Mathematics and Science Teaching: the SDSU: Noyce Scholars Program. NSF/EHR/Noyce TF/MTF. NSF-1240127. 09/15/12-08/31/19. \$3,097,445, plus \$500,000 matching funds from Qualcomm. **K.S. Williams** co-PI. L. Lamb PI, with S. Nickerson, R. Philipp, D. Ross, M. Houle Vaughn co-PIs. [MTF = Master Teaching Fellowship]
- NSF/DUE/RCN-UBE: RCN-UBE Summit: Learning from the Community of Education Networks. DBI-1543972. 9/15/15-8/31/17. \$49,970. **K.S. Williams** co-PI. Gordon Uno PI, with G. Bowser, C. Eaton, M. Pauley, G. Pullman, co-PIs.
- NSF/RCN-UBE: BioHUB: An Internet HUB for the Conceptual Assessment in Biology Community. NSF/DBI- Research Coordination Networks. NSF-1062096. 8/1/2011-7/31/2016. \$199,991. **K.S.**

**Williams** PI, K.M. Fisher co-PI [RCN-UBE = Research Coordination Network; UBE = Undergraduate Biology Education]

NSF/DUE/TUES: Project PLURIS: Purposeful Learning in Undergraduate Research and Independent Studies. NSF-1044460. 8/1/2011-7/31/2016. \$199,841. **K.S. Williams** PI, B.S. Allen co-PI [TUES = Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics] (5 presentations/proceedings)

NSF/DUE/TUES: Investigating Academic Climates and Institutional Contexts for Science Faculty with Education Specialties (SFES) across the U.S. NSF-1228657. 9/1/2012-8/31/2015. \$77,054. **K.S.**

**Williams** Senior Personnel, J. Rudd (CSU LA) PI [TUES = Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics]

POSE - Principles of Sustainability Education: knowledge management and community building. \$30,000. 10/01/2010-03/31/11. Assoc. for Advancement of Sustainability in Higher Education (AASHE).

B.S.Allen PI, **K.S. Williams** co-PI.

NSF Noyce: Springboard to Success! NSF-0434150. 9/04-8/11. \$84,830 average/yr. **K.S. Williams** PI

NSF Noyce: Springboard to Success! Supplement –NSF-0434150. 9/09-8/11. \$10,2470. **K.S. Williams** PI

NSF RCN-UBE Incubator: Conceptual Assessments in Biology – Tools for Learning. NSF-0957363. 1/10-12/11. \$49,850. K.M. Fisher PI, **K.S. Williams** co-PI

NSF/DUE/CCLI FIRST IV: Faculty Institutes for Reforming Science Teaching – Focus on Postdoctoral Scholars. NSF. 01/09-12/12. \$5,000. **K.S. Williams** consultant

NSF/DUE/CCLI Diagnostic Question Clusters to Improve Student Reasoning and Understanding in General Biology Courses. NSF. 1/08-12/11. \$5,000. **K.S. Williams** consultant

FIRST II: Faculty Institutes for Reforming Science Teaching Through Field Stations. \$76,827 to KSW.

2/01-6/07. NSF/DUE. Multi-institutional project for undergraduate educational reform. KSW PI on SDSU section (NSF subcontract from University of Oregon - DUE 0088847 \$999,900; co-PIs J. Hodder and D. Ebert-May).

FSML: Using Technology to Integrate Environmental Observations: Wireless Communication

Enhancement at San Diego State University Field Stations. \$187,500. 6/02-8/05. NSF/FSML/DBI-0225111. **K.S. Williams** PI (S. Shapiro, C. Luke co-PIs).

Ecology curriculum reform: Integrating innovative teaching and global change technology. \$80,000 and SDSU \$112,000. 1/00-1/02. NSF/DUE/CCLI DUE-9952816. **K.S. Williams** PI (D Deutschman, W Oechel co-PIs).

Project FIRST I (Faculty Institutes for Reforming Science Teaching Through Field Stations). \$15,000 subcontract to SDSU 2/1/98-1/31/01. Multi-institutional project for undergraduate educational reform.

**K.S. Williams** PI on SDSU section (NSF subcontract from University of Oregon - UFE-9752713, \$299,990; co-PIs J. Hodder and D. Ebert-May).

### Supporting Ecological Research (selected)

Arthropod Prey Availability in Cactus Wren Territories in San Diego County. \$73,000. U.S. Geological Survey (USGS), 8/1/15-7/31/16. (PI)

Otay Mountain Wilderness Mexican Flannelbush Study [Challenge Cost Share Agreement between BLM and SDSU]. \$28,000. Dept. of Interior – Bureau of Land Management, 4/08-12/13. (PI)

Thorne's Hairstreak Butterfly/Tecate Cypress Study [Challenge Cost Share Agreement between BLM and SDSU]. \$28,000. 5/08-12/13. Dept. of Interior – Bureau of Land Management. (PI)

Herbicide effects on immature stages of the Quino checkerspot butterfly. \$29,147. 8/1/2011-9/1/2013. CA Dept of Fish and Game. (PI, with D. Deutschman co-PI)

Marron Valley Quino Checkerspot Butterfly Habitat Enhancement Restoration. \$70,000. 2/1/04-11/30/06. California Department of Fish and Game. # P0350009 (PI)

Spectroscopic Instrumentation for San Diego State University Ecology Program. \$174,198. 4/1/03-3/31/06. NSF/DBI-0302486. (PI: Walt Oechel, co-PIs: M. Edwards, D. Lipson, **K. Williams**)

Endangered Butterfly in Anza-Borrego Desert State Park. \$19,498. 3/19/03 - 5/31/05. California Department of Parks and Recreation # C0243011. (PI)

- Rare Plant Pollinator Inventory. \$7,176. 2/1/03 – 1/10/05. California Department of Parks and Recreation. #C0243013 (PI)
- Endangered butterfly habitat maintenance for Laguna Mountains Skipper at Palomar Mountain and Facilitation of International Team Teaching and Curriculum Development between SDSU and CIBNOR, La Paz, B.C.S. SDSU. \$1,650. 11/00-6/01. International Programs Travel Award.
- Cuyamaca Rancho State Parks. \$14,294. 10/16/00 - 12/31/03. California Department of Parks and Recreation. # C0043051 (PI)
- Data Management and Communication Enhancement at San Diego State University Field Stations. \$40,000. 9/00-9/01. NSF/DBI-0084157. KSW PI (S. Shapiro, W. Oechel co-PIs.)
- Ecology and Conservation of the Laguna mountains skipper (Lepidoptera: *Pyrgus ruralis lagunae*). \$7,000. 4/00-10/01. US Forest Service & USGS BRD.# OOWRSA0491 (PI)
- Restoring and maintaining riparian ecosystem integrity in arid watersheds: meeting the challenge through science and policy analysis. \$41,500 to KSW. 1/99-1/02. EPA/NSF/USDA 1998 Water and Watersheds Research. PIs were: T. Maddock & V. Baker U. Ariz. Hydrology and Water Resources, B. Colby UA Agriculture & Recourse Economics; R. Glennon UA Law and J. Stromberg Ariz. State Univ. Plant Biology. I collaborated on this project and helped write portions of the proposal, based on my previous work with colleagues in Arizona. #00-015SC.
- Assessment of the role of effluent dominated rivers in supporting riparian functions. \$30,000 to KSW. 6/96-7/96. Collaborator on proposal submitted by Dr. Duncan Patten, Arizona State Univ. Arizona Department of Water Resources, Water Protection Fund.
- Riparian insect populations in restored habitats along the San Diego River, San Diego Co., CA. \$32,000. 7/95-6/96. California Department of Transportation. (PI)
- Riparian insect populations in restored habitats along the San Diego River, San Diego Co., CA. \$43,000. 5/93-6/95. California Department of Transportation. (PI)
- Insect Communities in Created, Restored and Natural Habitats Along the San Diego and San Luis Rey Rivers, San Diego, Co.: Insect community responses to variations in habitat quality. \$56,250. 1/91 - 5/93. California Department of Transportation. (PI)
- Mortality of *Quercus engelmannii* in San Diego Co. \$10,000. 6/90-10/91. California Department of Forestry and Fire Protection. PIs K. Williams and P. Zedler (SDSU).
- Effects of river bridges on riparian insect communities. \$7,500. 4/88-11/88. California Department of Transportation. (PI)
- Biological Control of Scale Insects at Chula Vista Wildlife Reserve. \$15,633. 4/89-11/90. Initial introduction of predatory beetles to control scale insect outbreak on the dominant plant, *Spartina foliosa*, at a marshland reserve in south San Diego Bay. San Diego Unified Port District (through Entrix). (PI)
- Survey of Insect Communities along the San Luis Rey River. \$32,000. 3/89 - 12/90. Study of insect community succession and herbivory at sites of riparian habitat restoration. State of California, Department of Transportation. (PI)

### **Professional Memberships**

Ecological Society of America (ESA)  
 Society for the Advancement of Biology Education Research (SABER)  
 Phi Beta Kappa; Nu Chapter of CA, Chapter President 2023-2024  
 Sigma Xi

### **Invited Presentations and Activities** (selected)

**On Scientific teaching, Instructional design, and Assessment** (first author was invited speaker unless otherwise noted with \*; † indicates student authors)

- Williams, K.S.** 2018. Quantitative reasoning for all: Integrating calculus and statistics in the biology curriculum. 103rd Annual Meeting, Ecological Society of America, New Orleans, LA, United States. (August 8, 2018).
- Williams, K.S.** 2018. An introduction to science education research. Workshop for IRACDA (Institutional Research and Academic Career Development) Fellows., NIH Program: IRACDA (Institutional Research and Academic Career Development) Fellows. Meeting for IRACDA (Institutional Research and Academic Career Development) Fellows, University of California San Diego, San Diego, CA, United States. (February 8, 2018).
- Williams, K.S.** 2018. Quantitative reasoning for all: Integrating calculus and statistics in the biology curriculum. Society for the Advancement of Biology Education Research (SABER), SABER West Annual Meeting, Univ. of California Irvine, CA, Irvine, CA, United States. (January 15, 2018).
- Williams, K.S.** 2018. Engaging Biology Majors in Quantitative Reasoning across the Major: A Design Plan. Invited Paper Session on Research in Improving Undergraduate Mathematical Sciences Education: Examples Supported by the National Science Foundation's IUSE: EHR Program. Mathematics Association of America/NSF, San Diego Convention Center, San Diego, CA, United States. (January 11, 2018).
- Williams, K.S.** 2018. Promoting Active Learning and Modeling in Precalculus: Design Features for Creating Engaging Lab Activities. Joint Mathematics Meetings, American Mathematical Society and Mathematical Association of America, San Diego Convention Center, San Diego, CA, United States. (January 10, 2018).
- Williams, K.S.** 2018. SUMMIT-P Update. Joint Mathematics Meetings, American Mathematical Society and Mathematical Association of America, San Diego Convention Center, San Diego, CA, United States. (January 10, 2018).
- Williams, K.S.** 2017. Investigating SFES- Science Faculty with Education Specialties- across the CSU and the United States. The California State University 2017 CSU STEMNet Conference, California State University Chancellors Office, Crowne Plaza Los Angeles International Airport, Los Angeles, CA, United States. (August 11, 2017).
- Williams, K.S.** 2017. Fostering change from within: Science Faculty with Education Specialties (SFES) influence teaching practices of departmental colleagues. SABER: Society for the Advancement of Biology Education Research, Univ. Minnesota, Twin Cities, MN, United States. (July 15, 2017).
- Williams, K.S.** 2017. Engaging diverse students in undergraduate biology curriculum reform. Paper done with many undergraduate student collaborators. Gordon Research Conference on Undergraduate Biology Education Research, Stonehill College, MA. July 9-14, 2017.
- Williams, K.S.** 2017. Engaging students in undergraduate biology curriculum reform. Cummings Biology Leadership Conference. Tucson, AZ. Feb. 24-26, 2017.
- Ibrahim, Roghin ✧, Lena Mohamed ✧, Monique Nguyen ✧, **K.S. Williams.** 2016. Explication of learning agendas and evaluating undergrad research accomplishments using PLURIS (Purposeful Learning in Undergraduate Research and Independent Studies). Cummings Biology Leadership Conference. New Orleans, LA. March, 2016.
- Williams, K.S.** 2015. Assessment for Improvement--from Course to Program: When Grades Don't Make the Grade. Gordon Conference on Undergraduate Biology Education Research, Bates College, ME. July 12-17, 2015.
- Williams, K.S.,** S.D. Bush, N. Pelaez, J.A. Rudd, M.T. Stevens, K.D. Tanner. 2015. Science Faculty with Education Specialties (SFES) Across the US: Their Roles, Contributions, and Advice. National IRACDA (NIH: Institutional Research and Academic Career Development) Conference. San Diego, CA. June. 14-16, 2015.
- Williams, K.S.** 2015. University of Rhode Island Academic Summit, **Keynote Speaker.** Invited to talk about improving undergraduate learning across disciplines. Kingston, RI. Jan. 15-16, 2015.
- Williams, K.S.,** S.D. Bush, N.J. Pelaez, J.A. Rudd, M.T. Stevens, K.D. Tanner. 2015. Misalignments: Challenges in Cultivating Science Faculty with Education Specialties<sup>SEP</sup> across the US. Cummings Biology Leadership Conference. Austin, TX. March 27-29, 2015.

- Williams, K.S.**, S.D. Bush, N. Pelaez, J.A. Rudd, M.T. Stevens, K.D. Tanner. 2014. Investigating the Phenomenon of Science Faculty with Education Specialties (SFES) Across the US: Their Roles, Contributions, and Advice. Department of Biology, San Diego State Univ. San Diego, CA. Sept. 22, 2014.
- Williams, K.S.**, S.D. Bush, N.J. Pelaez, J.A. Rudd, M.T. Stevens, K.D. Tanner. 2014. Widespread Distribution and Unexpected Variation: Questioning Assumptions about SFES in US. Cummings Biology Leadership Conference. Amelia Island, FL. March 14-16, 2014.
- Atkins, C., G. Chase, D. Deutschman, R. Monzon, S. Schellenberg, **K. Williams**. 2013. Mind the Gap: Using the Science Literacy Concept Inventory to Assess Metadisciplinary Understanding within the SDSU General Education Program. Project Kaleidoscope (PKAL) – Advancing what works in STEM education. Keck/PKAL STEM (Science Technology Engineering Math) Education Effectiveness Framework Project. Project Meeting II. California State University Los Angeles. Los Angeles, CA. April 4-5, 2013.

**On Ecological Research** (selected activities and invited presentations given by Kathy S. Williams, unless otherwise noted)

- Assessing sensitivity of Quino checkerspot butterfly larvae to two common herbicides used for habitat management. *Invited Speaker*. California Invasive Plant Council – Symposium. October, 2014. Chico, CA. [http://www.cal-ipc.org/symposia/archive/pdf/2014/Law\\_Williams.pdf](http://www.cal-ipc.org/symposia/archive/pdf/2014/Law_Williams.pdf)
- Invited seminar given at San Diego Partners for Biodiversity meeting of conservation biologists, and local and federal agency biologists and habitat managers. Work done with MS student C. Congedo†. Thorne's Hairstreak and Tecate Cypress: New Results on this Unique Relationship. San Diego County Department of Planning and Land Use. February 24, 2009.
- Laguna Mountains Skipper Workshop, Science Advisor. 2007. Presentation to about 15 researchers on Skipper research. Sponsored by the US Fish and Wildlife Service. February 21, 2007, Carlsbad, CA.
- Participation as an Independent Science Advisor for the East San Diego County MSCP Plan. Feb. 2006-8.
- Participation as a Science Advisor for Coulton Dunes Habitat Preserve Restoration Conference, UCRiverside, March 2006. Invited to small meeting (~ 15 participants) to suggest recommendations for recovery of the rare insect.
- Center for Conservation Biology and the Department of Entomology, University of California, Riverside. The Biology and Management of the Endangered Delhi Sands Flower-Loving Fly. Invited as workshop participant to develop a plan for conservation of this endangered species. March 30-31, 2006. Riverside, CA.
- What can arthropods tell us about the success of restoration attempts? 2002. CSU Pomona, Biology Dept.
- Connectivity and linkages for terrestrial invertebrates: Considerations from a bug's eye view. 2002. Meeting: South Coast Missing Linkages: Habitat Connectivity Planning for the South Coast Ecoregion. San Diego, CA. Organizers: Conservation Biology Institute, South Coast Wildlands Project, The Nature Conservancy, San Diego Zoological Society.
- Insect densities reflect environmental quality in coastal habitats: three case studies. 2001. Entomological Society of America Annual meeting. In Symposium "Insects in marine and saline environments." San Diego, CA.
- Biological perspectives: Butterflies and other insects of concern in the region. 2001. Santa Ana - Palomar Mountain Linkage Conservation Design Workshop. Santa Margarita Ecological Reserve, CA. Organizers: San Diego State University Field Station Programs, South Coast Wildlands Project, U.S. Geological Survey, and The Nature Conservancy.
- Insects as indicators of habitat quality in created habitats. 1999. UC Riverside, Entomology Dept.
- Insects as indicators of habitat quality in created and natural ecosystems. 1999. Arizona State University, Depts. of Botany, Ecology and Evolutionary Biology.
- What's all the noise about? Well-known cicadas of eastern U.S. and poorly-known cicadas of the west. Dept. of Biology. Occidental College, Los Angeles, CA. 1996.
- Symposium on "Conservation biology: Lessons from terrestrial arthropod biodiversity." Pacific Branch of the Entomological Society of America Annual Meeting, 1995. Invited to organize a symposium on insects and conservation; recruited 11 speakers from CA and AZ.

Insects and their allies as indicators of restoration success. Pacific Branch of the Entomological Society of America Annual Meeting, Symposium on “Conservation biology: Lessons from terrestrial arthropod biodiversity,” 1995.

Insects as ecological indicators of habitat restoration. Dept. of Entomology. UC Riverside. 1995.

Cicadas of southern California: A forgotten fauna. Bodega Marine Laboratory. UC Davis. 1995.

Inter- and intra-specific variation in digestive physiology checkerspot butterflies. Joint seminar to Departments of Entomology and Zoology. University of Arkansas. 1995.

Cicada sweat glands and thermal regulation. Department of Entomology. Kansas State University. 1995.

Invited lecture to Insect Biomechanics course; Dr. K. Loudon, instructor.

Department of Entomology. Kansas State University. April, 1995. Invited by Entomology Graduate Students as their speaker of the year. Presented 2 talks: Insects as indicators of habitat quality in created habitats.

## **VI. SERVICE FOR THE UNIVERSITY AND THE COMMUNITY**

### ***University Honors***

President Weber’s Top 25 Award. **K.S. Williams** was selected in 2009 for SDSU President Stephen Weber’s Top 25 award, a recognition program that honors 25 individuals each year that accomplished transformational work at San Diego State University. She was honored for her ongoing efforts to enhance science education for undergraduates.

### ***Committee Assignments*** (selected from last 6 yr)

#### **Service for the University**

Member of Academic Review Panel for School of Music and Dance, SDSU (2015)

Member SDSU University Research Council (2012-2015)

Member SDSU General Education Curriculum Committee (2012-present)

Member SDSU Undergraduate Curriculum Committee (2012-2014)

Chaired SDSU Senate Student Learning Outcomes Committee (2012-2013)

Member University General Education Assessment Task Force commissioned by SDSU Senate. (2012-13)

Member University General Education Task Force commissioned by the SDSU Senate. (2006-2008)

SDSU Phi Beta Kappa, Nu Chapter of California: Committee on Alumni & Honorary Members, Chair, Executive Committee Member-at-Large, and Past-President.

#### **Service for the College of Sciences**

CRMSE (Center for Research in Math and Science Education) Advisory Panel (2008-present)

SDSU Senate Student Learning Outcomes Committee, College of Sciences representative (2008-present)

#### **Service for the Biology Department**

Department Undergraduate Learning Assessment Committee Coordinator /chair or co-chair (2003-2012).

Served as advisor to this group, 2012-2014 as COS Student Learning Outcomes Committee member.

Department Curriculum Committee (2000-present).

Biology Undergraduate Adviser for Single-Subject emphasis and Ecology emphasis (2000-present),

#### **Service for the Academic and Scientific Community**

Phi Beta Kappa, Outreach to Granger Jr. High School. (1996-2012) Help recognize outstanding students in 7th and 8th grade classes from Granger, bring them to tour SDSU and lunch with faculty and administrators, and buy books with Bookstore gift certificates.

San Diego Zoological Society. (2008-2013) I have collaborated with staff at the Zoo to foster programs related to Biomimicry. I have collaborated in writing two NSF proposals with them to integrate biomimicry into their educational program (neither have been funded). I also provided photographs of Thornes Hairstreak butterflies for the cover of their conservation magazine.

### ***Scientific reviews and review panel membership***

Regular reviewer for journals, such as BioScience, Ecology, Ecosphere, American Midland Naturalist, Behaviour, Biological Conservation, Conservation Biology, Ecology, Environmental Entomology, Environmental Management, European Journal of Entomology, Evolution, Journal of Natural Resources

and Life Sciences Education, Conservation, Pan Pacific Entomologist, Restoration Ecology, National Assoc. for Research in Science Teaching, Higher Education Teaching and Learning (HETL).

Regular reviewer for grant proposals: Panel Member for NSF/DUE/IUSE, NSF/DUE/CCLI and NSF Ecology programs; individual proposals from NSF TUES (tracks I and III), CCLI, and FSML programs, EPA STAR Fellowship programs (invited), USDA programs, USDA Ecosystem Science Program, Netherlands Organization for Science Research (NWO) Biodiversity program.