Gail M. Drus Ph.D., Associate Professor
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814-471-1267

Education:

Ph.D.	University of California, Santa Barbara Specialization in Ecology. 2013.
M.S.	California State Polytechnic University, Pomona Specialization in Ecology. 2004.
B.S.	California State Polytechnic University, Pomona Major: Biology. 2002.

Teaching Experience:

Saint Francis University

2018-Present	Associate Professor	Introduction to Molecules, Cells and Animal Physiology Introduction to Evolution, Ecology and Plant Biology Science for Active Citizenship Natural History of Costa Rica Field Biology of Arizona Field Biology of the Coastal Carolinas Advanced Field Biology of Arizona Advanced Botany Natural History of Vertebrates Biostatistics Restoration Ecology Animal Care (Spring 2022) Biology Junior Seminar
2013-2018	Assistant Professor	Introduction to Molecules, Cells and Animal Physiology Introduction to Evolution, Ecology and Plant Biology Science for Active Citizenship Plant Diversity Advanced Botany Natural History of Vertebrates Environmental Studies Natural History of Costa Rica Field Biology of Manatees Field Biology of Arizona Field Biology of the Galapagos Islands Biology Junior Seminar

University of California, Santa Barbara

2007-2012	Teaching Assistant	Tropical Ecology Concepts and Controversies in Biology Diversity of Life Laboratory Plant Biodiversity Introduction to Ecology and Evolution and Physiology Laboratory Freshmen Seminar (Concepts in Biology) Advanced River Ecology
2011	Lecturer/Teaching Associate	Diversity of Life: Animals
2010	Supervising Instructor	Ecology of Invasive Plants Internship

California State Polytechnic University, Pomona

2005 - 2006	Lecturer	Vertebrate Zoology Lecture Vertebrate Zoology Laboratory Life Science (Biology for non-majors)
2005-2006	Supervisor	Vertebrate Zoology
2005	Supervisor	Special Problems for Undergraduate Students
2002-2004	Teaching Associate	Vertebrate Zoology Laboratory Plant Structures and Functions Laboratory Introductory Biology Laboratory (majors)
2003-2004 2001	Teaching Assistant	Ecological Field Studies in the Southwest Ecology

Mount San Antonio College, Walnut

2005-2006	Adjunct Faculty	Introductory Biology Lecture (non-majors) Introductory Biology Laboratory (majors) Introductory Biology Laboratory (non-majors)

Victor Valley Community College, Victorville

2005-2006	Adjunct Faculty	Introduction to Human Biology Introduction to Human Biology Laboratory Human Anatomy Human Anatomy Laboratory General Biology General Biology Laboratory

***Course syllabi, course survey statistics, and student evaluations available upon request.**

Internal Professional Activities:

Service on Campus Committees

2021-Present	Pandemic Lessons Learned Task Force
Fall 2020-Present	Alternate Academic Court
Fall 2020-Present	Faculty Senate
Spring 2020-2021	Infonet Committee
Fall 2019	Alternate: Faculty Senate
2019-Present	General Education Committee
2018-2019	Self-designed Major Committee
2017-2019	Faculty Advisory Committee on Community Engagement
2014-2017	Student Affairs Committee (Chair 2016-2017)

Search Committees

Assistant Professor of Biology, Anatomy and Marine Biology 2020-2021
Director, Center for Language and Global Learning 2019-2020
Assistant Professor of Biology, Premed 2019-2020
Assistant Professor of Biology, Aquarium and Zoo Science 2018-2019
Assistant Professor of Biology, Marine Biology 2014-2015

Club Faculty Advisor

2018-Present	SFU Botany Club
2015-2020, 2021	SFU Biology Club

2014-2016 SFU STARS

Community Outreach

2014-Present NOAA BWET Headwaters to Estuaries Program

2014-Present Science Outreach Center Programs

- 2019 SFU Science Outreach Quantum Quest Fest
- 2017-2019 SFU Science Outreach Cosmic Cocktails Program
- 2015-2019 SFU Science Outreach Cosmic Treats Program
- 2016-2017 SFU Science Outreach R-Space Program
- 2016 Summer Camp: Microscopes, Lake and Trails
- 2014-2019 SFU Outreach Solar 5K

2014-Present Cresson BPW (Secretary 2018-2021)

2016-2019 Plant Science Merit Badge Boy Scouts of America

2017, 2019 Chicken Visit to Girl Scouts of America for Animal Care Merit Badge

Study Abroad Programs

2019-2020, 2020-2021 Director of the Spanish in Costa Rica Program

2017-2018, 2018-2019 Co-Director of the Spanish in Costa Rica Program with Dr. Bill Stodart

2018 Co-Director of Field Biology in the Galapagos Islands with Dr. Melissa Meadows

2017 Director of the Spanish in Costa Rica Program

2015-2016 Assistant Director of the Spanish in Costa Rica Program with Brent Ottaway

Supervisor, Undergraduate Research and Senior Thesis and Honors Projects

2019-2021 Megan Wood Senior Thesis. The Effect of Climate Change on Human Health.

2020-2021 Kendra Zaruba, Jillian Leppert, Benjamin Kurtz, Kevin Collins, Timothy Miller, Jacob Schulte, Tim Miller and Gail Drus. Quantification and classification of freshwater organisms with an emphasis on algae. Partnership with Environmental Engineering.

2019 Alexandria Brown, Tim Currier, Adam Pillot, Kaycee Thomas, Gail Drus, and Lanika Ruzhitskaya. Evaluation of tardigrade culture methods and responses to different environmental conditions.

2018 – 2020 Nancy Waters and Gail Drus (student researchers TBA): Evaluation of various management treatments for invasive Japanese Barberry in the Saint Francis University Grotto

2018 – Present Patrick Kirby, John Weidner, Benjamin Kurtz, Brother Marius Strom and Gail Drus Ph.D.: "Integration of remote sensing and plant physiology measurements to quantify stress in invasive Japanese Knotweed (*Fallopia japonica*) subjected to various management techniques."

2017 – 2019 Emily Miller, John Weidner, Hannah Schoeppner, Mitchell Hogue, Griffin Sangrey, Gail Drus, Samantha Radford, Jim Eckenrode, Tyler Prince, Jessica Chverchko and Brooke Stem. "Hydroponic Rhizoremediation of Acid Mine Drainage Sites Utilizing *Fallopia japonica* and *Typha latifolia*." Phytoremediation for Acid Mine Drainage Sites.

2017 – 2018 Emily Miller and Josh Mills STARS Program. Chemical Competition between Japanese Knotweed and Pumpkins.

2016 – 2018 Rakeb Tafesse and Emily Miller: The effect of varying concentrations of Glyphosate herbicide on root starch storage in asexually and sexually propagated Japanese Knotweed.

2015-2016 Stephanie Wilson Senior Thesis. Construction of a Hydroponic Living Wall and its Potential Integration onto the Saint Francis University campus.

2015-2016 Erika Dreikorn Continuing Undergraduate Research. The effect of narrow leaf cattail (*Typha angustifolia*) removal on pond habitat quality.

2015-2016 Mark Frank Undergraduate Research and Senior Thesis. The Effect(s) of Acid Mine Drainage on the Development of the *Ceratopteris* gametophyte.

2015-2016	Dakota Hartlaub Undergraduate Research. Development of a Prosthetic for a Limbe Deficient Guinea Hen (*Numida meleagris*).
2015	John Woloschuk Summer Research. Chemical and Physical Competition between Japanese Knotweed and Pumpkins: Assessment of Interactions and Possible Treatment Methods.
2015	Allison Ohmler and Kaitlyn Murphy. Seahorse Nutrition in *Hippocampus zosterae.*
5 2015	*STARS* Research Program: Bryce England. Interactions between the roots of Japanese Knotweed (*Fallopia japonica*) and pumpkin plants (*Cucurbita maxima*) viewed through a root window.
2015	*STARS* Research Program: Ashley Hildebrand: Moss establishment on different substrates.
2014	Natalie Rampersad and Bryce England Undergraduate Research. Effects of Acidification on Growth Parameters in (Rhizophoraceae) Red Mangroves and (*Avicennia Germinans*) Black Mangroves.
2014	Juniata Students Taylor Johnston and Dylan Krycinski. Development of a prescribed burn plan for a site near the Raystown Field Station in cooperation with Army Corps of Engineers.

Teaching Awards/Instructional Grants

2017, 2021	Finalist - Distinguished Faculty Award, Saint Francis University
2016, 2018	Finalist - Swatsworth Award, Saint Francis University
2018	Nominated for "Become that Someone" Engaged Faculty Member
2011	Outstanding Teaching Assistant Award Office of Student Life, University of California, Santa Barbara.
2011	Instructional Improvement Grant, Office of the Associate Vice Chancellor, Academic Programs University of California Santa Barbara.

Research-Related Grants

Awarded

2016-2017 **Faculty Development Grant**: 3 Credit Grant Writing Release. "Japanese Knotweed Alternative Control Methods Testing." $3,000.00.

2014-2017 **Grant**: "Fire-smart southwestern riparian landscape management and restoration of native biodiversity in view of species of conservation concern and the impacts of tamarisk beetles."
Funding Agency: USDI-BOR Landscape Conservation Cooperative.
Role: Co-investigator/Subrecipient ($4,372.00 travel costs)
Primary Investigator and Institution: Robert Coulson, Professor Texas A&M University
Other Cooperating Institutions: Northern Arizona University, University of New Mexico, Albuquerque

Applied

2017 **Grant:** "Fire Management of Japanese Knotweed Invaded Areas."
Funding Agency: Pennsylvania Department of Conservation and Natural Resources.
Role: PI
Other Cooperating Institutions: Natural Biodiversity and Nature Abound.
Amount requested: $139,570.00
Status: The proposal was reviewed, but was unfortunately declined.

Publications:

Tracy, James L., Antonio Trabucco, A. Michelle Lawing, J. Tomasz Giermakowski, Maria Tchakerian, **Gail M. Drus**, and Robert N. Coulson. 2018. Random Subset Feature Selection for Ecological Niche Models of Wildfire Activity in Western North America. Ecological Modelling. 383 (10): 52-68.

Coulson, Robert N., J. L. Tracy, **G. Drus**, T. Giermakowski, M. T. Tchakerian, M. Johnson. 2017, Fire-smart southwestern riparian landscape management and restoration of native biodiversity in view of species of conservation concern and the impacts of tamarisk beetles. Final report for the Bureau of Reclamation. 251 p.

Drus, G.M., Dudley, T,L., D'Antonio, C.M, Even, T.J., Brooks, M.L, and Matchett, J.R.. 2014, Synergistic interactions between leaf beetle herbivory and fire enhance tamarisk (Tamarix spp.) mortality, Biological Control **77**: 29-40.

Drus, Gail M. 2013. "*Tamarix* and Fire." *In* A. Sher and M. Quigley [eds.], *Tamarix*: A case study of ecological change in the American West, Oxford University Press, Grand Junction Colorado, USA.

Drus, Gail M., Tom L. Dudley, Matt L. Brooks, J. R. Matchett. (2013) The effect of leaf beetle herbivory on the fire behaviour of tamarisk (*Tamarix ramosissima* Lebed.). International Journal of Wildland Fire **22**(4): 446-458.

Tom Dudley, Matthew Brooks, Steven Ostoja, Pat Shafroth, Susan Roberts, **Gail Drus,** Mike Kuehn, Iwona Kuczynska, Kevin Hultine, Kumud Acharya, Ben Conrad, Dan Bean, Curt Deuser, et al. 2011. Effectiveness Monitoring of Springfed Wetlands and Riparian Restoration Treatments. Final report for the Clark County Multiple Species Habitat Conservation Plan.159 pp.

Brooks, M., Dudley, T., **Drus, G.,** and Matchett, J., 2008, Reducing wildfire risk by integration of prescribed burning and biocontrol of Invasive Tamarisk (*Tamarix* spp.): El Portal, California, 40 p.

Contributor to:
Bloodworth, B. R., Shafroth, P. B., Sher, A. A., Manners, R. B., Bean, D. W., Johnson, M. J., & Hinojosa-Huerta, O. (2016). Tamarisk beetle (Diorhabda spp.) in the Colorado River basin: Synthesis of an expert panel forum. Colorado Mesa University.

Manuscripts Submitted/In Review:
Drus, Gail M, Tom L. Dudley, Carla M. D'Antonio and Matthew M. Brooks. The effect of Tamarisk (*Tamarix*) on desert riparian fire regimes in the southwestern United States. Journal of Arid Environments. Undergoing final preparation for resubmission.

Manuscripts in Preparation
Dudley, Tom, Dan Bean, Jack DeLoach, **Gail Drus,** Dave Thompson, Alexander Gaffke, James Tracy (other authors TBD). "35 Year Retrospective of the Tamarisk Biocontrol Program. Chapter in USDA publication (more details forthcoming).

Student Publications
Frank, Mark A. and Drus, Gail M. "Effects of Acid Mine Drainage on the Development of *Cerapteris* ferns." Spectrum. 8(4): 22-25.

Woloschuk, John M. and Drus, Gail M. "Chemical and Physical Competition Between Japanese Knotweed and Pumpkins: Assessment of Interactions and possible treatment methods. Spectrum (11)1: 15-23

Student Manuscripts in Preparation
Miller, Emily, Josh Mills and Gail Drus. "Chemical Competition between Japanese Knotweed and Pumpkins: Evaluation of Root Interactions." BIOS.

Emily Miller, John Weidner, Rakeb Tafesse, Allyson Rotello and Gail Drus. The effect of varying concentrations of Glyphosate herbicide on root starch storage in asexually and sexually propagated Japanese Knotweed. BIOS.

Emily Miller, John Weidner, Hannah Schoeppner, Mitchell Hogue, Griffin Sangrey, Gail Drus, Samantha Radford, and Jim Eckenrode. "Hydroponic Rhizoremediation of Acid Mine Drainage Sites Utilizing *Fallopia japonica* and *Typha latifolia*." BIOS.

Recent Invited Presentations, Workshops and Working Group:

2021 **Drus, Gail M.** June. "35 Year Retrospective of the Tamarisk Biocontrol Program Working Group." Reno, NV

2019 **Drus, Gail M**. October. "Primer of Experimental Design: Learning in *Mimosa pudica* Workshop." Regional Association for Biology Laboratory Education (RABLE) Conference. Cumberland, MD.

2019 **Drus, Gail M.** October. "Wildland Fire in SW Riparian Areas and the Tamarisk Leaf Beetle." Riparian Restoration & Tamarisk Beetle Workshop. Palm Springs, CA.

2018 **Drus, Gail M.** March. "Wildland Fire in SW Riparian Areas and the Tamarisk Leaf Beetle." Riparian Restoration & Tamarisk Beetle Workshop. Benson, AZ.

2017 **Drus, Gail M.** April. "Wildland Fire in SW Riparian Areas and the Tamarisk Leaf Beetle." Tamarisk Beetle & Riparian Restoration Workshop. Phoenix, AZ.

2016 **Drus, Gail M.** November. "Wildland Fire in SW Riparian Areas and the Tamarisk Leaf Beetle." Tamarisk Beetle & Riparian Restoration Workshop. Las Vegas, NV.

2016 **Drus, Gail M.** June. "Wildland Fire in SW Riparian Areas and the Tamarisk Leaf Beetle." Tamarisk Beetle & Riparian Restoration Workshop. University of New Mexico's Utton Transboundary Resources Center. Albuquerque, New Mexico.

2015 **Drus, Gail M.** February. Tamarisk and Fire in Southwestern Desert Ecosystems. Tamarisk Beetle Expert Panel. Tempe, AZ

2014 **Drus, Gail M**., Tom L. Dudley, Matthew M. Brooks, and J.R. Matchett. August. Tamarisk and Fire in Southwestern Desert Ecosystems. Ecological Society of America Conference. Sacramento, CA.

2014 **Drus, Gail M**., Tom L. Dudley, Matthew M. Brooks, and J.R. Matchett. February. Tamarisk and Fire in Southwestern Desert Ecosystems. Tamarisk Research Conference: Riparian Restoration in the Western US. Colorado Mesa University. Grand Junction, CO.

Recent Presented Posters, Papers and Seminars:

2016 Bruce K. Orr, **Gail M. Drus**, Tom L. Dudley, Glen T. Leverich, Zooey E. Diggory, Matthew J. Johnson, James R. Hatten, Adam Lambert, and Devyn A. Orr. Tamarisk, birds, beetles, fires, and floods: riparian restoration on the Virgin River. November. 2016 Annual Conference of the Society of Ecological Restoration – Southwest Chapter. Las Vegas, NV.

2016 Bruce K. Orr, Tom L. Dudley, Glen T. Leverich, Zooey E. Diggory, Matthew J. Johnson, James R. Hatten, Kevin R. Hultine Devyn A, Orr, and **Gail M. Drus**. August. Tamarisk, water, beetles, and birds: The importance of vegetation in addressing the challenges of managing novel riparian ecosystems in the arid west. Ecological Society of America Conference. Fort Lauderdale, FL.

Saint Francis Student Poster Presentations

2019 Patrick Kirby, Brother Marius Strom, John Weidner and Gail Drus Ph.D.: "Integration of remote sensing and plant physiology measurements to quantify stress in invasive Japanese Knotweed (*Fallopia japonica*) subjected to various management techniques." Fall 2019 SFU Research day. Loretto, PA.

2019 Emily Miller, John Weidner, Hannah Schoeppner, Mitchell Hogue, Griffin Sangrey, Gail Drus, Samantha Radford, and Jim Eckenrode. "Hydroponic Rhizoremediation of Acid Mine Drainage Sites Utilizing *Fallopia japonica* and *Typha latifolia*." Spring 2019 STEAM Poster Presentation. Loretto, PA.

2019 Emily Miller, John Weidner, Rakeb Tafesse, Allyson Rotello and Gail Drus. The effect of varying concentrations of Glyphosate herbicide on root starch storage in asexually and sexually propagated Japanese Knotweed. Spring 2019 STEAM Poster Presentation. Loretto, PA.

2018 Emily Miller, John Weidner, Hannah Schoeppner, Mitchell Hogue, Griffin Sangrey, Gail Drus, Samantha Radford, and Jim Eckenrode. "Hydroponic Rhizoremediation of Acid Mine Drainage Sites Utilizing *Fallopia japonica* and *Typha latifolia*." Fall 2018 SFU Research day. Loretto, PA.

2018 Emily Miller, John Weidner, Rakeb Tafesse, Allyson Rotello and Gail Drus. The effect of varying concentrations of Glyphosate herbicide on root starch storage in asexually and sexually propagated Japanese Knotweed. Fall 2018 SFU Research day. Loretto, PA.

2018 John Weidner, Allison Rotello, Gail Drus, and Samantha Radford. "Hydroponic Rhizoremediation of Acid Mine Drainage Sites Utilizing *Fallopia japonica* and *Typha latifolia* – A Methods Investigation." Fall 2018 SFU Research day. Loretto, PA.

2018 Miller, Emily, Josh Mills, and Gail Drus. Chemical Competition between Japanese Knotweed and Pumpkins. Undergraduate Research Day at the Capitol. Harrisburg, PA 2018.

2017 Tafesse, Rakeb, Emily Miller and Gail Drus. The effect of varying concentrations of Glyphosate herbicide on root starch storage in asexually and sexually propagated Japanese Knotweed. Fall 2017 SFU Research day. Loretto, PA.

2017 Miller, Emily, Josh Mills, and Gail Drus. Chemical Competition between Japanese Knotweed and Pumpkins. Fall 2017 SFU Research day. Loretto, PA

2015 Frank, Mark and Gail Drus. Effects of Acid Mine Drainage on the Development of *Cerapteris* ferns. Fall 2015 SFU Research Day. Loretto, PA.

2015 Wilson, Stephanie and Gail Drus. Construction of a Hydroponic Living Wall and its Potential Integration onto the Saint Francis University. Fall 2015 SFU Research day. Loretto, PA.

2015 Wilson, Stephanie, and Gail M. Drus. Construction of a Hydroponic Living Wall and its Potential Integration onto the Saint Francis University. Fall 2015 SFU Research day. Loretto, PA.

2015 Wilson, Stephanie and Gail Drus. Construction of a Hydroponic Living Wall and its Potential Integration onto the Saint Francis University. 2015 Summer Research Poster Session. Loretto, PA.

2015 Dreikorn, Erika, and Gail Drus. The effect of narrow leaf cattail (*Typha angustifolia*) removal on pond habitat quality. Fall 2015 SFU Research Day. Loretto, PA.

2015 Woloschuk, John, Gail Drus and Kristina Strosnider. Chemical and Physical Competition between Japanese Knotweed and Pumpkins: Assessment of Interactions and Possible Treatment Methods. Fall 2015 SFU Research Day. Loretto, PA.

2015 Omler, Allison, Kaitlin Murphy, Sue Shoemaker and Gail Drus. Nutrition in Dwarf Seahorses (*Hippocampus zosterae*)." Fall 2015 SFU Research Day. Loretto, PA.

2015 Rampersad, Natalie, Gail Drus and Sue Shoemaker. Effects of Acidification on Growth Parameters in (*Rhizophoraceae*) Red Mangroves and (*Avicennia germinans*) Black Mangroves." Fall 2015 SFU Research Day. Loretto, PA.

Field Demonstrations/Tours:

2021 **Drus, Gail M.** June. JFSP Project Area tour to attendees of Tamarisk biocontrol retrospective working group. Lovelock, NV.

2014 **Drus, Gail M**. October. Demonstration of pre-fire fuel characterization techniques for the Forestry class at the Raystown Field Station. Entriken, PA.

2009 **Drus, Gail M**. November. JFSP Project Area tour to attendees of Tamarisk Research Conference. Lovelock, NV.

2006 **Drus, Gail M**. November. JFSP Project Area tour to Nevada Department of Wildlife, Nevada Department of Forestry, National Resource Conservation Service, and Silver State Hunt Club. Lovelock, NV.

Other Professional Activities and Organizations:

Landscape Conservation Cooperative Network (2015-Present)
RiversEdge West (2018-Present)
Ecological Society of America, Mid-Atlantic Chapter (2013-2018)
Tamarisk Coalition (2006-2017)
Tri-Beta Honor's Society (2002-Present)
Cresson Business and Professional Women's Foundation (2014-present, Secretary 2017-Present)

Professional Certifications

Commercial Pesticide Applicator (Renewed 2021)

Professional References

Saint Francis University, Loretto, Pennsylvania 15940 USA
Dr. Justin Merry, Associate Professor and Chair. Biology Department. Phone: (814) 471-1105
Dr. Marian Langer, Professor. Biology Department. Phone: (814) 472-3080

University of California, Santa Barbara. California 93106 USA
Dr. Thomas Even, Lecturer S.O.E. Department of Ecology, Evolution and Marine Biology. Phone: (805) 893-2904
Dr. Thomas Dudley, Associate Researcher. Marine Science Research Institute. Phone: (805) 698-8251
Dr. Carla D'Antonio, Professor. Department of Ecology, Evolution and Marine Biology. Phone: (805) 893-2796

Warren Wilson College, Asheville, North Carolina 28815 USA
Dr. Alisa Hove, Professor. Department of Biology. Phone: (828)771-3071

US Geological Survey, *Western Ecological Research Center. Yosemite Field Station. El Portal, California 95318 USA*
Dr. Matthew Brooks, Research Botanist. USA. Phone: (559) 240-7622