Stephen Mulkey, PhD

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Higher Education

The University of Pennsylvania, Ph.D. Biology/Ecology, 1986
The University of Missouri-Columbia, M.A. Biology/Ecology, 1979
The University of Missouri-Columbia, B.S. Forestry, Fisheries, Wildlife, 1975

Executive and Administrative Positions

Program Director, Division of Graduate Education, National Science Foundation, January 2017-January 2018
President, Unity College, 2011 – January 2016; president emeritus February 2016
Director, Professional Science Master's Program University of Idaho, 2010 – 2011
Director, Environmental Science Program, University of Idaho, 2008 – 2011
Science Advisor to Florida government Century Commission for a Sustainable Florida, 2007
Director of Research and Outreach/Extension, University of Florida School of Natural Resources and Environment 2005 – 2007
Director, International Center for Tropical Ecology, 1995 – 1996
Associate Director, International Center for Tropical Ecology, 1995

Academic Appointments

Lecturer, Department of Biology, University of Florida, August 2019 - present
Professor of Ecology, Unity College, July 2011 – January 2016
Professor of Environmental Science with tenure, University of Idaho, 2008-11
Research Associate, School of Forest Resources & Conservation, University of Florida, 2001-08
Associate Professor of Botany with tenure, The University of Florida, 1997-2008
Research Associate, Smithsonian Institution, Tropical Research Institute, 1997-2002
Research Affiliate. Smithsonian Tropical Research Institute, Smithsonian Institution, 1994-97
Associate Professor of Biology with tenure, University of Missouri at St. Louis, 1993-96
Visiting Assistant Professor, Botany Department, University of California, Davis, 1990-91
Founding member and principal, International Center for Tropical Ecology, 1989
Research Associate, Missouri Botanical Garden, 1987-2000
Assistant Professor of Biology, University of Missouri at St. Louis, 1986-1993

Mission Statement
To service the ethical obligation of higher education to foster the development of a sustainable civilization through the development of diverse and inclusive interdisciplinary research, education, and outreach.

Results as President of Unity College 2011 - January 2016
Unity College is trademarked as *America's Environmental College*. It is a residential and liberal arts with 700-undergraduates located in Unity, Maine. Founded 1965.

- Installed sustainability science as the framework for the entire College curriculum
- Solicited and stewarded the College's first major gift, $10 million for the endowment
- Solicited and stewarded the second largest gift, $1.4 million to create the McKay Farm and Research Station

- Built a relationship with the Andrew Wyeth family and acquired ongoing funding for use of the family's private island estate for faculty research and cultural development of Unity College students
- Led campus movement and trustee deliberation to make Unity College the first in the nation to divest its endowment ($15.5 million) from the top 200 fossil fuel companies
- Renovated and modernized all teaching and research facilities
- Implemented state-of-the art IT - two orders of magnitude bandwidth expansion and connection to Internet II
- Led construction of three residence halls (LEED silver standard), new dining hall, and new classroom and laboratory building, renovated all existing buildings - total new construction more than $20 million completed August 2016
- Created the College's premier graduate degree, a professional science master's program in sustainability science
- Expanded faculty by hiring 15 scholars with terminal degrees at nationally competitive salaries
- Led the creation of the College's first Honors Program and first Undergraduate Research Program
- Led the hiring and professionalization of 16 new mid-level administrators in Enrollment, Development, Marketing, Sustainability, and Student Support
- Transformed three-year decline to achieve maximum enrollment while increasing net revenue per student and maintaining selective admissions and freshman discount rate below 40%
- Increased annual net revenue by more than 31% relative to 2011
- Increased average Annual Fund giving by a factor of three
- Increased operating budget from $12 million FY12 to $18 million FY16
- Expanded minority enrollment and campus inclusivity

Administrative and Leadership Experience 1992-2011

- *University of Idaho, Director, Environmental Science Program*. I assumed the leadership of this interdisciplinary unit in August 2008. Environmental Science consisted of over 100 affiliate faculty and administers a campus-wide undergraduate and graduate curriculum with academic tracks in social, natural, and physical sciences. Ninety-six graduate students were affiliated with faculty in 9 colleges. Research and outreach capacity were enhanced through administration of two intramural grant funds and close collaboration with the University of Idaho sustainability program. Academic programs were redesigned to incorporate core environmental interdisciplinary courses. I led the effort to produce the NSF funded Professional Science Master's degree program. From early 2010 through June 2011, I directed a NASA funded program to deploy climate change curriculum to Idaho educators in secondary schools.

- *University of Florida School of Natural Resources and Environment*. From January 2005 through June 2007, I was Director of Research and Outreach/Extension for the School of Natural Resources and Environment at UF. I developed new interdisciplinary faculty engagement in land use and climate change, and led an effort to establish a land use institute for the state of Florida housed within SNRE at UF. These efforts resulted in new programs for faculty, graduate students and undergraduates with research interests in sustainability science. I worked closely with the Academic Director to develop the SNRE Action Plan, a strategic plan which included creation of curricula for graduate students and undergraduates and hiring of full-time tenure-track faculty. With UF Extension I created the Sustainability Working Group, focused on energy, greenhouse gas emissions, land use, urban issues, and sustainability. I was appointed as Science Advisor the Century Commission for a Sustainable Florida, a legislatively-created state commission in Tallahassee.

- *University of Missouri - St. Louis.* The centerpiece of my international program development experience has been the nationally ranked training and conservation program that I co-founded at the University of Missouri - St. Louis. This effort included collaboration with the Missouri Botanical Garden my ongoing efforts in curriculum development for graduate students from Latin America. In 1992 we established the International Center for Tropical Ecology, which I directed during my final two years at UM-St. Louis. My efforts included curriculum development, fundraising for graduate student fellowships, recruitment of students from Latin America, and fundraising and design of a $1.5 million state-of-the-art tropical

greenhouse. The program attracted dozens of students from Latin America using funds generated from the World Ecology Medal (recipients include Jane Goodall, Richard Leaky, and Jacques Cousteau).

Highlights of Program Development 2005-2015

- Professional Science Master's degree in Sustainability Science. Unity College. August 2012- 2015
- Development of sustainability science as the framework for liberal arts education. Led the curricular and pedagogical development of transdisciplinary sustainability science as the framework for all degree programs at Unity College. 2012-2015
- Indigenous center for STEM research and graduate education. Co-PI in program development with Marcos Galindo. 2009-2011
- Collaborative development of a transdisciplinary climate change curriculum for classrooms in secondary schools of the Intermountain West. 2009 – 2011
- Professional Science Master's degree programs in Environmental Science for the University of Idaho. Principal author of successful NSF proposal and application to Idaho State Board of Education. 2009
- Lead in creation of Environmental Science Program Graduate Interdisciplinary Enhancement Fund (GIEF). Competitive intramural funds to increase interdisciplinary programming. January 2009 - 2011
- Led Environmental Science Program Funds for Interdisciplinary Teams (FIT) Intramural Grants Competition. 2009
- Led development of strategic plan for Environmental Science Program to support integrative curricula, faculty and graduate student research, and expanded outreach capacity. 2008
- People and Land Use Strategies - PLUS - Faculty Work Group at the University of Florida. Created a major report for the state commission on sustainability entitled *Towards a Sustainable Florida - A Review of Environmental, Social and Economic Concepts for Sustainable Development in Florida.* Founder and chair 2006
- Founder and chair of Climate Change Faculty Work Group hosted by the School of Natural Resources and Environment. the Climate Change Faculty Work Group. Lead author and editor on a technical white paper funded by Environmental Defense entitled *Greenhouse Gas Mitigation through Forestry and Agriculture in Florida*. 2007-2008
- Program to create a land use institute for Florida. Lead administrator 2005-2007
- Led initial phase of the creation of NSF funded National Ecological Observatory Network (NEON) node in Florida. 2006
- Revised and led the School of Natural Resources and Environment Grants Competition to provide seed funding for interdisciplinary research with emphasis on sustainability and land use - Funding exceeded $150,000 annually resulting in ~$12 million in extramural applications. 2005-2007

Fiscal Management

- Managed several research budgets from federal grants including salaries and multi-year allocation of resources beginning in 1983
- Managed intramural grants program and Research/Outreach Extension budget including grants for inter-institutional collaboration for the School of Natural Resources and Environmental Science and at the University of Florida. 2005-2008
- Managed intramural grants program and inter-college budget for the Environmental Science Program at the University of Idaho. 2008-2011
- Led the development and execution of divestment of $15.5 million endowment at Unity College in November 2012
- Created five-year strategic budget front-loaded with investment spending for turnaround of Unity College with positive net revenue delivered two years early. January 2012-December 2015
- Managed annual budget increase from $12 million to $18 million at Unity College. FY12-FY16
- Directed and oversaw $20 million in new construction and renovation with state authorized bonds. 2013-2015

Advancement and Donor Relations

- Successfully recruited donors and Anheuser-Busch at University of Missouri ST. Louis for support of the International Center for Tropical Ecology including funds for construction of tropical research greenhouse. 1994
- Participated in multiple events for outreach to donor base through University of Florida Foundation. 2006
- Developed environmental science branding for donor recruitment at University of Idaho. 2009
- Cultivated and stewarded the two largest gifts in history of Unity College - $10 million and $1.5 million including endowment for operations of Unity College McKay Farm and Research Station. 2011-2014
- Negotiated ongoing support from the Andrew Wyeth family for Unity College faculty and student research. 2013-2016
- Engaged with Rockefeller family in Camden, Maine, and cultivated donors from Portland, Rockland, and Bangor. 2012-2015

Experience with IT and Distance Programming

- Developed classroom technology for delivery of climate science to secondary schools in Idaho. 2009
- Collaboratively developed technology for distance delivery to University of Idaho facilities in Boise. 2010
- Created synchronous delivery of graduate course on climate change at University of Idaho. 2010
- Directed the development of online undergraduate and graduate programs at Unity College. 2013-2016
- Expanded Unity College bandwidth from 25Mb to 2Gb including connection to Internet II. 2012
- Directed the creation of state-of-the-art GIS and media lab at Unity College. 2012

Experience with Institutional Strategic Planning, Assessment, and Accreditation

- Developed and executed program assessment, rubrics, and external review at the University of Florida. 2006-2007
- Collaboratively developed college-level institutional strategic plan in the College of Liberal Arts and Sciences at the University of Florida. 1999
- Co-directed the development of the strategic plan for the School of Natural Resources and Environment at the University of Florida. 2006
- Developed and managed program assessment, rubrics, and external review at University of Idaho. 2008-2010
- Collaboratively developed institutional strategic plan at the University of Idaho.2009
- Led and managed the development of strategic plan for the Environmental Science Program at the University of Idaho. 2009
- Led and managed fully detailed institutional strategic plan including deliverables, assignment of staff, and budgeting at Unity College. Summer 2012-December 2015
- Led and participated in all aspects of successful ten-year accreditation of Unity College. 2013
- Served as lead reviewer for ten-year accreditation, Conway School of Landscape Ecology. 2015

Efforts to Expand Institutional Inclusiveness and Diversity

- Served as principal to build the Latin American graduate program at the University of Missouri St. Louis in collaboration with the Missouri Botanical Garden. 1992-1996
- Created and managed efforts to advance students of First Nations at the University of Idaho through engagement with the Nez Perce and Coeur d'Alene tribes. 2009-2011
- Co-led the early development of Indigenous STEM (ISTEM) at the University of Idaho. 2010-2011
- Expanded gender and geographic diversity of faculty at Unity College. 2011-2015
- First president at Unity to hire executives of color – one is now the president. 2013-2015

- Expanded minority and geographic diversity of students recruited and retained at Unity College. 2012-2015
- Directed the development of Conservation Law program at Unity College to include more than 22 percent women students. 2014
- Increased women undergraduates at Unity College from 45 percent to 56 percent. 2012-2015
- Expanded minority scholarships and tuition discounts at Unity College 2012-2015
- Funded programs various programs such as Safe Space training, LGBTQ campus group at Unity, and Peace Jam at Unity College. 2012-2015

Sustainability and Engagement with Urban Sustainability Issues

- Led the development of a proposal for a land use institute for the state of Florida focused on issues of sprawl and urban sustainability and climate impacts. 2005-2007
- Founder and chair of People and Land Use Strategies (PLUS) for engagement with issues of sprawl and urban sustainability throughout Florida. 2006
- Science advisor to the Century Commission for a Sustainable Florida specifically addressing issues of urban impact on climate change. 2007
- Engagement with Florida NAACP on issues of environmental justice and climate change for urban settings 2007
- Led the partnership between Program for Resource Efficient Communities and the School of Natural Resources and Environment at the University of Florida. 2005-2007
- Development of professional science master degree track in sustainability science in collaboration with faculty working on urban sustainability issues at the University of Idaho. 2010
- Principal in the development of Bioregional approach to Sustainable Land Use Planning at the University of Idaho. 2008
- Principal in the development of S-TURNS (Shape the Trajectory of Urban and Regional use of Natural Resources toward Sustainable communities) focused on the Spokane-Coeur d'Alene corridor – A collaborative program between the University of Idaho and Washington State University. 2010
- Developed professional masters level degree programs at University of Idaho and Unity College. 2010-2016
- Plenary panelist and speaker at the Delhi Sustainable Development Summit, Delhi, India. 2013
- Member of Board of Directors for the Association for the Advancement of Sustainability in Higher Education (AASHE). 2013-2016

Examples of Outreach and Engagement 2006-2018

- March 2018. Workshop Leader. Traveling Workshop Program. National Association Geoscience Teachers.
- April 2017. Higher Education During the Great Disruption. University of Florida.
- October 2017. Keynote address Energy Water Food Nexus International Summit, Orlando.
- October 2017. Higher Education During the Great Disruption. Bicentennial keynote address, University of Michigan School for the Environment and Sustainability. Blog post for this lecture.
- October 2015. Opening keynote address for national convention of the Association for the Advancement of Sustainability in Higher Education (AASHE), Sustainability Education in the Environmental Century.
- January 2014-October 2016. Board of Directors of AASHE.
- January 2013-December 2015. Board of Directors of Natural Resource Council of Maine (NRCM).
- February 2013. At invitation of IPCC Executive R. K. Pachauri served as plenary panelist at the Delhi Sustainable Development Summit, Delhi, India.
- October 2013-2015. Board of Directors of Maine Campus Compact with focus on sustainability.
- July 2011. Harvard University Graduate School of Education. Advancement Leadership for Presidents.
- July 2011-2015. Various public talks on climate change and the environmental imperative for higher education. Venues include but not limited to Northern Alabama University, Colorado Mountain College, Maine Climate Solutions Symposium keynote in Augusta, St. Joseph's College, Mount Allison University (Canada), National Council for Science and Environment, Association for the Advancement of Sustainability in Higher Education plenary October 2013.

- November 2012. Initiated and led the creation of policy to divest the Unity College endowment fund from holdings in the 200 largest fossil fuel companies.
- September 2010. Panelist and plenary speaker for statewide conference, Understanding the Science and Politics of Climate Change, sponsored by Monsanto and the Council on Industry and the Environment, Boise, ID.
- March-June 2010. Project leader for three state effort to develop climate change education proposal for NSF Climate Change Education Program, Phase I
- March-June 2010. Project leader in development of NASA Global Climate Change Education proposal involving stakeholders throughout the Intermountain West
- March-July 2009. Principal in interaction with stakeholders in the Spokane – Coeur d'Alene population corridor in the development of the Urban Long Term Research Activity NSF exploratory proposal
- February 2009. Organizer, moderator, and speaker for University of Idaho participation in the National Teach-In on Global Warming
- October 2008. Speaker and panelist at the University of Idaho President's Sustainability Symposium, Boise
- March 2008. Plenary speaker and panelist at the 2008 Public Interest and Environment Conference, College of Law, University of Florida
- November 2007. Speaker and panelist at forest fragmentation conference sponsored by the Florida Forestry Association. Carbon Mitigation Options in Forestry
- September 2007. Speaker and panelist at Florida State NAACP Conference. Environmental Justice and Climate Change
- July 2007. Organizer and moderator for workshop on Greenhouse Gas Mitigation through Florida Forestry and Agriculture. Sponsored by Environmental Defense at the University of Florida
- May 2007. Presenter and panelist at conference on journalism and the environment at Scripps Howard Institute on the Environment at Florida Atlantic University. Climate Change Impacts and Adaptation.
- May 2007. Presenter and panelist at Florida state conference on climate change, Tampa
- May 2007. Presentation to Century Commission for a Sustainable Florida. Energy Wedges for Florida
- Spring 2007 - spring 2008. Member Alachua County Energy Conservation and Strategies Commission
- April 2007. Presentation to Florida Governor and Cabinet. Conversations on Climate Change
- March 2007. Presentation to select committee of the Florida House and Senate. Climate and Energy in Florida
- March 2007. Presentation to Florida Energy Commission on climate and energy alternatives
- January 2007. Presentation at state conference on Facets of Sustainability. Climate Change and Land Use in Florida
- Fall 2007. Advocate for energy policy in Washington, DC, through engagement with the Florida Congressional contingent. Funded by the Union of Concerned Scientists
- September 2006. Presentation to Sarasota Board of County Commissioners on creation of a land institute for Florida resulting in an earmark of $1 million

Presentations and Blogs

- The Environmental Century
- Convocation Address 23 August 2014
- Natural Resources Council of Maine - Consequences and Hope in the Environmental Century
- Presidents Page at Unity College (2011-January 2016)
- Stephen Mulkey on YouTube
- Stephen Mulkey on Vimeo
- Intermountain Climate (2010-2011)

Examples of Reports for Policy Makers

- Mulkey, S. 2015. A positive vision for Maine: A knowledge-based adaptation economy. *Bangor Daily News.*
- Mulkey, S. 2014. So now what? An open letter to the environmental community after the midterm elections. *Kennebec Valley Journal.*

- Mulkey, S. 2014. Profile in Yale Environment 360 online.
- Mulkey, S. 2012. The sustainability professional. *Sustainability 5:366-370.*
- Mulkey, S. S. (editor and author) 2008. Opportunities for greenhouse gas reduction through forestry and agriculture in Florida. Environmental Defense Fund.
- Mulkey, S. S. 2007. Climate change and land use in Florida: Interdependencies and opportunities. Century Commission for a Sustainable Florida.
- Mulkey, S. S. and M. van Soestenbergen. 2007. Florida dependence on petroleum. Century Commission for a Sustainable Florida.
- Mulkey, S. S. 2007. Energy wedges for Florida. Century Commission for a Sustainable Florida.
- Mulkey, S. S. (editor and lead author) 2006. Towards a sustainable Florida: A review of environmental, social, and economic concepts for sustainable development in Florida. Century Commission.

Awards and Grants

My research has been supported by competitive grants from NSF, NASA, and three academic institutions – the University of Missouri St. Louis, the University of Florida, and the University of Idaho. Additional major support has been provided by Environmental Defense Fund, the Andrew Mellon Foundation, and several grants from the Smithsonian and Smithsonian Tropical Research Institute (not all listed below). After December 2004, my work turned to program development and administration as Director of Research and Outreach/Extension in the School of Natural Resources and Environment at the University of Florida. During spring 2007 I also worked under contract for the Florida state commission on sustainability.

NSF, 2010-2013
$691,716. Science Master's Program in Environmental and Natural Resource Sciences for the University of Idaho. S. Mulkey PI, 2010-2011. John Lawrence responsible PI 2011-2013.

NASA, 2010-2014
$547,727. Collaborative development of a climate change curriculum for classrooms in the Intermountain West. Global Climate Change Education Program. S. Mulkey PI, 2010-2011.

NSF, 2009-2012
$144,883. An Interdisciplinary Team-Based International Research Experience in Biodiversity Conservation and Sustainable Community Development. S. Mulkey Co-PI.

Idaho State Board of Education, 2010-2011
$126, 000. Developing a university-wide multimedia instruction resource at the University of Idaho. S. Mulkey Co-PI with M. Johnson.

Environmental Defense, 2006-2007
$75,000 for development of a white paper on climate mitigation through Florida forestry and agriculture; S. Mulkey PI with J. Alavalapati, A. Hodges, A. Wilkie, S. Grunwald.

The Andrew Mellon Foundation, 2000-2004
$480,000. Characteristics of regrowth forest in Eastern Amazonia; with Daniel Zarin, co-PI.

NSF, 1998-1999
Functional and Integrative Biology (SGER-9805908)
$50,000. Branch carbon balance and allocation during an extreme El Niño and La Niña in a wet Neotropical forest. S. Mulkey PI.

University of Florida Research Board, 1998-1999
$28,000. Branch carbon balance and allocation during an extreme El Niño and La Niña in a wet Neotropical forest. S. Mulkey PI.

Andrew Mellon Foundation, 1998-1999
$140,000. Carbon balance in the canopies of two Neotropical forests with contrasting seasonality S. Mulkey PI.

Loundsberry Foundation, 1998
$160,000. The carbon balance of tropical forest canopies S. Mulkey PI with S. J. Wright and K. Winter.

UM Research Board, 1997
$28,000. Functional convergence in two neotropical forests. S. Mulkey PI.

NSF, 1995-1997
Bioinstrumentation (DBI 9419994)
$141,500. Multi-user analytical equipment for the plant ecology program at UM-St. Louis. S. Mulkey PI.

UM Research Board, 1995-1997
$9,800. Regional carbon flux in two Neotropical forests. S. Mulkey PI.

NSF, 1994
Functional and Integrative Biology (IBN-9220759) $11,000.
Research Opportunity Award, Elizabeth Newell Co-PI. Phenology of nonstructural carbohydrate flux in a tropical canopy.

NSF, 1993-1997
Functional and Integrative Biology (IBN-9220759)
$193,504. Coordination of leaf physiology and morphology with variations in resources available to two Neotropical canopy tree species. S. Mulkey PI.

NSF, 1993-2001
NSF Young Investigator Award to Kimberlyn Williams (DEB 9357080)
$142,842. S. Mulkey PI responsible 2000-2001.

NSF, 1993.
$7,500. Dissertation Research, Damond Kyllo. (DEB 9311079)
Nutrient translocation through VA mycorrhizae and the effects on plant performance and early succession under differential light in a lowland tropical forest. S. Mulkey, PI.

Scholarly Studies Program of the Smithsonian Institution, 1992
$52,000. The phenology and ecophysiology of tropical forest trees. S. Mulkey PI.

NSF, 1993.
Ecology (DEB-9311079)
$7,000. Nutrient translocation through VA mycorrhizal and the effects on plant performance and early succession under differential light in lowland tropical moist forest, S. Mulkey PI with Damond Kyllo.

NSF 1983.
~$8,000. Ecophysiology of shade tolerance of understory plant species in tropical wet forest
Dissertation Improvement, Brenda Casper PI, S. Mulkey dissertation (exact record unavailable at NSF)

American Museum of Natural History Chapman Fund 1975.
$300. Avian communities of habitat islands in Central Canada. Master's research.

Research 1976-present

2010-present. Sustainability science and environmental science programming in higher education.

2001-present. Continuation of functional ecology and carbon relations of forest canopies and ecophysiology of understory plant species in Central Panama.

2001-2005. Functional ecology of understory plant species in regrowth forests of Eastern Amazonia.

1992-2000. Functional ecology of tropical forest canopies in wet and dry forests of Central Panama.

1986-1991. Water relations and gas exchange of understory plant species in contrasting water availability in tropical forest of Central Panama.

1981-1985. Ecophysiology of shade tolerance of understory plant species in tropical wet forest. Dissertation.

1980-81. Ecophysiology of tropical alpine rosette species in East Africa; Elephant use of *Dendrosenecio keniodendron* on Mt. Kenya.

1976-78. Bird community dynamics of central Manitoba and Saskatchewan habitat islands. MA thesis.

Publications

Book

Mulkey, S. S., R. L. Chazdon, A. P. Smith (eds.). 1996. *Tropical Forest Plant Ecophysiology.* Chapman and Hall, NY. 675 pp.

Professional Papers

Mulkey, S. S. and R. C. Smardon. 2018 *in press*. Model structures for institutional support and recognition. In: *Education for Sustainable Human and Environmental Systems: Transcending Disciplinary Boundaries Through Revealed Complexity*. W. Focht, M. Reiter, and P. Barresi (eds.) Routledge.

Mulkey, S. S. 2017. Higher education in the environmental century. *American Journal of Economics and Sociology* 76. DOI: 10.1111/ajes.12194

Mulkey, S. S. 2015. Sustainability programming is an ethical obligation for higher education in the environmental century. Invited editorial, *Journal of Sustainability Education 10*.

Roberts, J. T., Vincent, S. and S. Mulkey. 2015. Interdisciplinary environmental education: Islands of progress in a sea of dysfunction. *Journal of Environmental Studies and Sciences. DOI 10.1007/s13412-015-0279-z*

Vincent, S. and S. Mulkey. 2015. Transforming US higher education to support sustainability science for a resilient future: The influence of institutional administrative organization. *Environment, Development, and Sustainability 16 DOI 10.1007/s10668-015-9623-4*

Avalos, G. and S. S. Mulkey. 2014. Photosynthetic and morphological acclimation of seedlings of tropical lianas to changes in light environment. *American Journal of Botany 101: 2088-2096.*

Mulkey, S. S. 2012. Sustainability science as a foundation for higher education in the environmental century. *Sustainability 5:356-358.*

Watkins, J. E. Jr., M. C. Mack, T. R. Sinclair, and S. S. Mulkey. 2007. Ecological and evolutionary consequences of desiccation tolerance in tropical fern gametophytes. *New Phytologist 176:1-10.*

Watkins, J. E. Jr., M. C. Mack, and S. S. Mulkey. 2007. Gametophyte ecology and demography of epiphytic and terrestrial tropical ferns. *American Journal of Botany 94: 701-708.*

Avalos, G., S. S. Mulkey, K. Kitajima, S. J. Wright. 2007. Canopy colonization strategies of two liana species in a tropical dry forest. *Biotropica 39:393-399*.

Santiago, L. S. and S. S. Mulkey. 2005. Leaf productivity along a precipitation gradient in lowland Panama: patterns from leaf to ecosystem. *Trees – Structure and Function 19:349-356.*

Gamon, J. A., S. S. Mulkey, and K. Kitajima, L. Serrano, S. J. Wright. 2005. Diverse optical and photosynthetic properties in a neotropical forest during the dry season: implications for remote estimation of photosynthesis. *Biotropica 37:547-560.*

Aragão, D. V., L. B. Fortini, S. S. Mulkey, D. J. Zarin, M. M. Araujo, and C. J. R. de Carvalho. 2005. The role of drought and reproduction in gas exchange in an understory tropical plant Miconia ciliata (Melastomataceae): correlation but no causation between leaf nitrogen and maximum assimilation. *American Journal of Botany 92:456-461.*

Kitajima, K., S. S. Mulkey, and S. J. Wright. 2005. Variation in crown light utilization characteristics among tropical canopy trees. *Annals of Botany 95: 1-13.*

Santiago, L. S., S. S. Mulkey. 2003. A test of gas exchange measurements on excised canopy branches of ten tropical tree species. *Photosynthetica 41:343-347.*

Fortini, L., S. S. Mulkey, D. J. Zarin, S. S. Vasconcelos, and C. J. R. de Carvalho. 2003. Drought constraints on leaf gas exchange by Miconia ciliata (Melastomataceae) in the understory of an Eastern Amazonian regrowth forest stand. *American Journal of Botany 90:1064-1070.*

Graham, E. A., S. S. Mulkey, S. J. Wright, K. Kitajima, and N. G. Phillips. 2003. Cloud cover limits productivity in a tropical rain forest tree during La Niña. *Proceedings of the National Academy of Science (USA) 100: 572-576.*

Kitajima, K., S. S. Mulkey, M. Samaniego, and S. J. Wright. 2002. Decline of photosynthetic capacity with leaf age and position in two tropical pioneer tree species. *American Journal of Botany 89: 1925-1932.*

Newell, E., S. S. Mulkey, and S. J. Wright. 2002. Seasonal patterns of carbohydrate storage in four tropical tree species. *Oecologia 131:333-342.*

Terwilliger V. J., K. Kitajima, D. J. Le Roux-Swarthout, S. S. Mulkey, and S. J. Wright. 2002. Influences of heterotrophic and autotrophic resource use on carbon and hydrogen isotopic compositions of tropical tree leaves. *Isotopes in Environmental and Health Studies 38:133-160.*

Terwilliger V. J., K. Kitajima, D. J. Le Roux-Swarthout, S. S. Mulkey, and S. J. Wright. 2001. Intrinsic water-use efficiency and heterotrophic investment in tropical leaf growth of two Neotropical pioneer tree species as estimated from delta 13-C values. *New Phytologist 152:267-281.*

Avalos, G. and S. S. Mulkey. 1999. Photosynthetic acclimation of the liana Stigmaphyllon lindenianum to light changes in a tropical dry forest canopy. *Oecologia 120:475-484.*

Avalos, G. and S. S. Mulkey. 1999. Seasonal changes in liana cover in the upper canopy of a Neotropical dry forest. *Biotropica 31:186-192.*

Avalos, G. S. S. Mulkey, and K. Kitajima. 1999. Optical properties of tree and liana foliage in the canopy of a tropical dry forest. *Biotropica 31:517-520.*

Mulkey, S. S. 1999. *Physiological Ecology of Tropical Plants*, by Ulrich Lüttge. 384 pp*. Quarterly Review of Biology 74:78.*

Stork, N. E., S. J. Wright, and S. S. Mulkey. 1997. Craning for a better view: The Canopy Crane Network. *Trends in Ecology and Evolution 12:418-419.*

Kitajima, K., S. S. Mulkey, and S. J. Wright. 1997. Seasonal leaf phenotypes in the canopy of a tropical dry forest: photosynthetic characteristics and associated traits. *Oecologia 109:490-498.*

Mulkey, S. S. 1997. *The Ecology of a Tropical Forest: Seasonal Rhythms and Long-Term Changes.* E. G. Leigh, Jr., A. S. Rand, D. M. Windsor (eds.). *Quarterly Review of Biology 72:488.*

Kitajima, K., S. S. Mulkey, and S. J. Wright. 1997. Decline of photosynthetic capacity with leaf age and leaf longevities for five tropical canopy tree species. *American J. Botany 84:702-708.*

Hunt, J. H., S. S. Mulkey, and S. J. Wright. 1996. Caste dimorphism in the wasp Epipona guerini (Hymenoptera: Vespidae; Polistinae, Epiponini): Further evidence for larval determination. *Journal Kansas Entomological Society 69:362-369.*

Mulkey, S. S., K. Kitajima, and S. J. Wright. 1996. Plant physiological ecology of tropical forest canopies. *Trends in Ecology and Evolution 11:408-412.*

Mulkey, S. S., S. J. Wright, and A. P. Smith. 1996. Influence of seasonal drought on the carbon balance of tropical forest plants. *In:* S. S. Mulkey, R. Chazdon, A. P. Smith (eds.) *Tropical Forest Plant Ecophysiology.* Chapman and Hall. NY.

Mulkey, S. S., S. J. Wright, and K. Kitajima. 1995. Plant phenology and allocation in response to seasonal and vertical light gradients in the upper canopy of a tropical dry forest. *Selbyana 16:169-173.*

Mulkey, S. S., S. J. Wright, and A. P. Smith. 1993. Comparative physiology and demography of three Neotropical forest shrubs: alternative shade-adaptive character syndromes. *Oecologia 96:526-536.*

Wright, S. J., J. L. Machado, S. S. Mulkey, and A. P. Smith. 1992. The water relations of understory shrubs (Psychotria Rubiaceae) in a tropical moist forest. *Oecologia 89:457-463.*

Mulkey, S. S., A. P. Smith, S. J. Wright, J. L. Machado, and R. Dudley. 1992. Contrasting leaf phenotypes control seasonal variation in water loss in a tropical forest shrub. *Proceedings of the National Academy of Sciences (USA) 89:9084-9088.*

Mulkey, S. S., and R. W. Pearcy. 1992. Interactions between acclimation and photoinhibition of photosynthesis of a tropical forest understory herb, *Alocasia macrorrhiza* (L.) G. Don, during simulated canopy gap formation. *Functional Ecology 6:719-729.*

Mulkey, S. S., A. P. Smith, and S. J. Wright. 1991. Comparative life history and physiology of two understory Neotropical herbs. *Oecologia 88: 263-273.*

Mulkey, S. S., S. J. Wright, and A. P. Smith. 1991. Drought acclimation of an understory shrub in a seasonally dry tropical forest. *American Journal of Botany 78:579-587.*

Sternberg, L., S. S. Mulkey, and S. J. Wright. 1989. Oxygen isotope stratification in a tropical moist forest. *Oecologia 81:51-56.*

Sternberg, L. and S. S. Mulkey, with S. J. Wright. 1989. Ecological interpretation of leaf carbon isotope ratios: Influence of respired carbon dioxide. *Ecology 70:1317- 1324.*

Mulkey, S. S., A. P. Smith, and T. P. Young. 1984. Predation by elephants on *Senecio keniodendron* (Compositae) in the alpine zone of Mount Kenya. *Biotropica 16:246-248.*

University of Idaho Service

University and College
Dean's University Wide Programs council, 2008-2011
Graduate Council, 2008-2011
Graduate Directors group, 2008-2011
Request for Innovation Provost's evaluation committee, December 2008-2009

University of Florida Service

University and College
University Faculty Senate 2007-2008
Ecology and Environment Committee, College of Liberal Arts and Sciences 2005-08
UF Water Institute Faculty Advisory Council 2005-2007
UF Florida Institute for Sustainable Energy Advisory Council 2005-2007
UF Sustainability Committee 2005-2007
UF/IFAS Sustainability Work Group 2006
Biology Degree Program Development 2003
Information Technology Advisor Committee 2001-2008
University Faculty Senate 1999-2001
Member Dean's Search Committee for Biological Sciences Coordinator 1998; 2002
Search Committee for Dean of Research - UF Liberal Arts and Sciences, 1998
Member University Center for Excellence in Teaching (UCET), 1997-2009

Department Committees
Space, 2003-2006
Computing, 1997-2008, Chair 1997-2004
Plant Physiology Search, spring and fall 1998
Greenhouse, 2003-2005
Botany Curriculum, 2000-2001
Botany Departmental Budget, Chair 1998
Graduate, 1998-1999

Professional Societies and Professional Service (partial)

National Association Geoscience Teachers 2018-present
Association for the Advancement of Sustainability in Higher Education board 2014-2016
Natural Resources Council of Maine 2012-2015
American Geophysical Union, joined 2006
Association for Tropical Biology and Conservation, joined 1986
Botanical Society of America, joined 1985
Ecological Society of America, joined 1976
Founding Member International Canopy Crane Network 1997
Co-organizer (with S. J. Wright) Tropical Forest Canopy Symposium, March 1997

Panel Member NSF Ecological and Evolutionary Physiology. 1996-1997
Panel Member, NSF-DOE joint program Terrestrial Ecology & Global Change 1997
NSF FIRST committee 1998-2000
Member National Scientific Advisory Board Wind River Canopy Crane, USFS, 1995-98
Electronic Editor for Association for Tropical Biology web pages and electronic publications through 2002.
Electronic Editor for International Center for Tropical Ecology 1994-1996
Reviewer for grants to NSF and USDA competitive grants programs, 1998-2010
Reviewer (1998-2010): *Biotropica, Oecologia, Ecology, Forest Science, J. Ecol., Funct. Ecol. International J. Plant Science, Tree Physiology, Science*
NSF IGERT panelist, June 2008

Graduate Students and Postdoctoral Associates

Ricardo J. Santiago Garcia. Ph. D. expected 2016
David Griffith. MS. 2012
Amethyst Merchant. Ph. D. 2007
Eddie Watkins. Ph. D. 2006
Jason Hupp. M.S. 2006
Juan Posada. Ph. D. 2005
Kevin P. Hogan, Ph. D. 1987. University of Illinois. Post-doctoral associate 2004
Louis Santiago. Ph. D. 2003
Grace Crummer, M.S. 2003
Lisa Merry, M.S. 2002
Hillary Cherry, M.S. 2002
Damond Kyllo, Ph. D. 2000
Eric Graham, Ph. D. 1998. University of California, Los Angeles. Post-doctoral associate 1998
Gerardo Avalos. Ph. D. 1999
Deborah Olander, M.S. 1996
Pedro Lopez-Valencia. M.S. 1993

Teaching and Mentoring Experience

University of Florida – 2019-present
Communities and Climate Change (recurring every semester beginning fall 2019)
Climate Change Biology (alternate semesters online beginning fall 2019)
Climate Change and Human Wellness (alternate semesters beginning spring 2020)
Global Change Ecology and Sustainability (every semester beginning spring 2019)

Unity College – 2011-2015
Upper division seminar on Management of Ecological Change

University of Idaho – 2008-2011
Global Climate Change
Capstone graduate seminar. Alternate fall semesters
Capstone undergraduate seminar. Fall semesters
Undergraduate Research. Spring semesters

University of Florida – 1996-2008
Introductory Ecology Lecture and Laboratories (recurring fall 1997-2003)
Advanced Plant Ecophysiology (graduate course recurring fall 1998-2008)
Introductory Biology – Ecology, Evolution and Behavior (recurring spring 2003- 2008)
Biology – Biology of Global Change (recurring spring 2004-2008)
Biology for majors (recurring spring 2003-2008)
Lecturer in the curriculum in Family Medicine 2002-2008, UF School of Medicine.
Topics: (1) Ecology for Docs: The Role of Global Change in Human Health. (2) Neurobiology and Genetics of Addiction.

University of Missouri-St. Louis – 1986-1996
Honors Ecology (Undergraduate specialty course in tropical ecology)
Tropical Forest Plant Ecophysiology
Environmental Plant Physiology (functional ecology specialty graduate course)
General Ecology lecture and General Ecology lab (principal undergraduate courses)
Ecology of Plants in Extreme Environments