

CREIGHTON MCMASTER LITTON

Dept. of Natural Resources & Env. Management
College of Tropical Ag. & Human Resources
University of Hawaii at Manoa
1910 East-West Rd.
Honolulu, HI 96822

e-mail: litton@hawaii.edu
Phone: 1-808-956-6004
Fax: 1-808-956-6539
www.ctahr.hawaii.edu/LittonC/

RESEARCH AND TEACHING INTERESTS

Forest ecology and management; terrestrial ecosystem ecology and biogeochemistry; global change biology; restoration ecology; invasive species ecology; wildfire ecology

EDUCATION

2002 **Ph.D.** Botany, University of Wyoming, Department of Botany, Laramie, Wyoming
1994 **M.S.** Forest Resources, School of Forest Resources, North Carolina State University, Raleigh, North Carolina
1991 **B.A.** Environmental Studies, Emory and Henry College, Emory, Virginia

PROFESSIONAL APPOINTMENTS

2017-current **Professor**, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa
2017-current **Director**, Undergraduate Research Office, Office of the Vice Chancellor for Research, University of Hawaii at Manoa
2012-2017 **Associate Professor**, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa
2007-current **Graduate Faculty**, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa; and Ecology, Evolution and Conservation Biology, University of Hawaii at Manoa
2007-2012 **Assistant Professor**, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa
2006-2007 **Adjunct Research Faculty**, Oregon State University and USDA Forest Service
2005-2006 **Adjunct Research Faculty**, California State University Fullerton, Department of Biological Science
2003-2005 **Postdoctoral Research Ecologist**, California State University Fullerton and USDA Forest Service
2002 **Postdoctoral Research Ecologist**, Univ. of Wyoming & U SDA Forest Service

AWARDS

2013 Board of Regents' Medal for Excellence in Teaching, University of Hawaii at Manoa
2012 Mentor of the Year, Department of Natural Resources and Environmental Management Graduate Student Organization (NREM-GSO)
2002 Plummer Scholarship, School for Env. & Natural Resources, University of Wyoming
2001 NASA Space Grant Graduate Research Fellowship
2001 Ellbogen Outstanding Graduate Student Teaching Award, University of Wyoming

REFEREED JOURNAL PUBLICATIONS (SINCE JOINING UHM IN 2007)

Undergraduate, M.S. and Ph.D. students, and Postdoctoral scientists are underlined and indicated with superscripts (^{UG, MS, PhD, PD}, respectively)

IN REVIEW/REVISION

Hughes, R.F., Asner, G.P, **Litton, C.M.**, Selmants, P.C.^{PD}, Giardina, C.P., and Jacobi, J. In revision. Effects of invasive plant species on carbon storage in Hawaiian ecosystems. *Pacific Science*.

Iwashita, D.^{MS}, **Litton, C.M.**, and Giardina, C.P. In revision. Temperature impacts on tree species diversity in Hawaiian montane wet forest. *Pacific Conservation Biology*.

PUBLISHED

Wehr, N.^{MS}, Hess, S.C., and **Litton, C.M.** In press. Biology and impacts of Pacific Island invasive species. *Sus scrofa*, the feral pig (Artiodactyla: Suidae). *Pacific Science*.

Ellsworth, L.M.^{PhD}, Dale, A.P., **Litton, C.M.**, and Miura, T. 2017. Improved fuel moisture prediction in non-native tropical *Megathyrus maximus* grasslands using Moderate Resolution Imaging Spectroradiometer (MODIS) derived vegetation indices. *International Journal of Wildland Fire*: In press.

Powell, K.^{MS}, Ellsworth, L.M.^{PhD}, **Litton, C.M.**, Oleson, K.L.L., and Ammond, S.^{MS}. 2017. Towards cost-effective restoration: Scaling up restoration in ecosystems degraded by nonnative invasive grass and ungulates. *Pacific Science*: In press.

Rowe, J.^{PhD}, **Litton, C.M.**, Lepczyk, C.A., and Popp, B.N. 2017. Impacts of endangered seabirds on nutrient cycling in montane forest ecosystems of Hawaii. *Pacific Science*: In press.

Hawbaker, T.J., Trauernicht, C., Howard, S.M., **Litton, C.M.**, Giardina, C.P., Jacobi, J.D., Fortini, L.B., Hughes, R.F., Selmants, P.C., and Zhu, Z. 2017. Wildland Fires and Greenhouse Gas Emissions in Hawaii. Pages 57-73 in P. C. Selmants, C. P. Giardina, J. D. Jacobi, and Z. Zhu, editors. Baseline and projected future carbon storage and carbon fluxes in ecosystems of Hawai‘i. U.S. Geological Survey Professional Paper 1834.

Long, M.S.^{MS}, **Litton, C.M.**, Giardina, C.P., Deenik, J., Cole, R.J.^{PD}, and Sparks, J.P. 2017. Impact of nonnative feral pig removal on soil structure and nutrient availability in Hawaiian tropical montane wet forests. *Biological Invasions* 19: 749-763.

Pierre, S.^{PhD}, Hewson, I., Sparks, J., **Litton, C.M.**, Giardina, C.P., Groffman, P. and Fahey, T. 2017. Ammonia oxidizer populations vary with nitrogen cycling across a tropical montane mean annual temperature gradient. *Ecology* 98: 1896-1907.

Sleeter, B.M., Liu, J., Daniel, C.J., Hawbaker, T.J., Wilson, T.S., Fortini, L.B., Jacobi, J.D., Selmants, P.C., Giardina, C.P., **Litton, C.M.**, and Hughes, R.F. 2017. Projected future carbon storage and carbon fluxes in terrestrial ecosystems of Hawai‘i from changes in climate, land use, and disturbance. Pages 107-128 in P. C. Selmants, C. P. Giardina, J. D. Jacobi, and Z. Zhu, editors. Baseline and projected future carbon storage and carbon fluxes in ecosystems of Hawai‘i. U.S. Geological Survey Professional Paper 1834.

Sumiyoshi, Y.^{MS}, Crow, S.E., **Litton, C.M.**, Deenik, J.L., Taylor, A.D., Turano, B., and Ogoshi, R. 2016. Belowground impacts of perennial grass cultivation for sustainable biofuel feedstock production in the tropics. *Global Change Biology Bioenergy*: doi:10.1111/gcbb.12379.

Selmants, P.C.^{PD}, Adair, K.L., **Litton, C.M.**, and Giardina, C.P., and Schwartz, E. 2016. Increases in mean annual temperature do not alter soil bacterial community structure in tropical montane wet forests. *Ecosphere* 7:e01296.

- Ellsworth, L.M.^{PhD}, **Litton, C.M.**, and Leary, J.J.K. 2015. Restoration impacts on fuels and fire potential in a dryland tropical ecosystem dominated by the invasive grass *Megathyrsus maximus*. *Restoration Ecology* **23**:955-963.
- Friday, J.B., Cordell, S., Giardina, C.P., Inman-Narahari, F., Koch, N., Leary, J.J.K., **Litton, C.M.**, and Trauernicht, C. 2015. Future directions for forest restoration in Hawai'i. *New Forests* **46**: 733-746.
- Trauernicht, C., Pickett, E., Giardina, C., **Litton, C.M.**, Cordell, S. and Beavers, A. 2015. The scale and context of wildfire in Hawai'i. *Pacific Science* **69**:427-444.
- Evans, E.W.^{MS}, Ellsworth L.M.^{PhD}, and **Litton, C.M.** 2015. Impact of grazing on fine fuels and potential fire behavior in a nonnative tropical grassland. *Pacific Conservation Biology* **21**: 126-132.
- Chynoweth, M.W.^{MS}, Lepczyk, C.A., **Litton, C.M.**, Hess, S.C., Kellner, J.R. and Cordell, S. 2015. Dispersal and home range use of non-native feral goats in a tropical island montane dry landscape. *PLOS ONE* **10**(3): e0119231. doi:10.1371/journal.pone.0119231.
- Pierce, A.^{PD}, McDaniel, S., Wasser, M., Ainsworth, A., **Litton, C.M.**, Giardina, C.P, and Cordell, S. 2014. Using a prescribed fire to test custom and standard fuel models for fire behavior prediction in a non-native, grass-invaded tropical dry shrubland. *Applied Vegetation Science* **17**: 700-710.
- Ellsworth, L.M.^{PhD}, **Litton, C.M.**, Dale, A., and Miura, T. 2014. Invasive grasses change landscape structure and fire behavior in Hawaii. *Applied Vegetation Science* **17**: 680-689.
- Bothwell, Lori^{UG}, Selmants, P.C.^{PD}, Giardina, C.P. and **Litton, C.M.** 2014. Leaf litter decomposition rates increase with rising mean annual temperature in Hawaiian tropical montane wet forests. *PeerJ* **2**: e685.
- Giardina, C.P., **Litton, C.M.**, Crow, S.E., and Asner, G.P. 2014. Increased total belowground carbon flux, and not soil carbon loss, drives temperature related increases in soil respiration. *Nature Climate Change* **4**: 822-827.
- Selmants, P.C.^{PD}, **Litton, C.M.**, Giardina, C.P. and Asner, G.P. 2014. Ecosystem carbon storage does not vary with mean annual temperature in Hawaiian tropical montane wet forests. *Global Change Biology* **20**: 2927-2937.
- Mascaro, J., **Litton, C.M.**, Hughes, R.F., Uowolo, A. and Schnitzer, S.A. 2014. Is logarithmic transformation necessary in allometry? Ten, one-hundred, one-thousand-times yes. *Biological Journal of the Linnean Society* **111**: 230-233.
- Cole, R.J.^{PD} and **Litton, C.M.** 2014. Vegetation response to removal of nonnative feral pigs from Hawaiian tropical montane wet forest. *Biological Invasions* **16**: 125-140.
- Murphy, M.^{UG}, Inman-Narahari, F., Ostertag, R., and **Litton, C.M.** 2014. Invasive feral pigs reduce tree fern growth and survival in a native-dominated Hawaiian montane wet forest. *Biological Invasions* **16**: 63-71.
- Ellsworth, L.M.^{PhD}, **Litton, C.M.**, Taylor, A.D, and Kauffman, J.B. 2013. Spatial and temporal variability of *Megathyrsus maximus* fuel loads and moisture on Oahu, Hawaii. *International Journal of Wildland Fire* **22**: 1083-1092.
- Chynoweth, M.W.^{MS}, **Litton, C.M.**, Lepczyk, C.A., Hess, S.C. and Cordell, S. 2013. Biology and impacts of Pacific Island invasive species. 9. *Capra hircus*, the feral goat (Mammalia: Bovidae). *Pacific Science* **67**: 141-156.

- Iwashita, D.^{MS}, **Litton, C.M.**, and Giardina, C. 2013. Coarse woody debris carbon storage across a mean annual temperature gradient in tropical montane wet forest. *Forest Ecology and Management* 291: 336-343.
- Ammond, S.^{MS}, **Litton, C.M.**, Ellsworth, L.M.^{PhD} and Leary, J.K. 2013. Restoration of native plant communities in a Hawaiian lowland dry ecosystem dominated by the invasive grass *Megathyrsus maximus*. *Applied Vegetation Science* 16: 29-39.
- Ammond, S.^{MS} and **Litton, C.M.** 2012. Competition between native Hawaiian plants and the invasive grass *Megathyrsus maximus*: Implications of functional diversity for ecological restoration. *Restoration Ecology* 20: 638-646.
- Cole, R.J.^{PD}, **Litton, C.M.**, Koontz, M.K.^{UG} and Loh, R.K. 2012. Vegetation recovery 16 years after feral pig removal from a wet Hawaiian forest. *Biotropica* 44: 463-471.
- Litton, C.M.**, Giardina, C.P., Albano, J.K.^{UG}, Long, M.S.^{MS} and Asner, G.P. 2011. The magnitude and variability of soil-surface CO₂ efflux increase with temperature in Hawaiian tropical montane wet forests. *Soil Biology and Biochemistry* 43: 2315-2323.
- Mascaro, J., **Litton, C.M.**, Hughes, R.F., Uowolo, A. and Schnitzer, S.A. 2011. Minimizing bias in biomass allometry: Model selection and log-transformation of data. *Biotropica* 43:649-653.
- Dunkell, D.O.^{MS}, Bruland, G.L., Evensen, C.I. and **Litton, C.M.** 2011. Sediment transport, and effects of feral pig (*Sus scrofa*) exclusion in a forested Hawaiian watershed. *Pacific Science* 65: 175-194.
- Ise, T.^{PD}, **Litton, C.M.**, Giardina, C.P. and Ito, A. 2010. Comparison of modeling approaches for carbon partitioning: Impact on estimates of global net primary production and equilibrium biomass of woody vegetation from MODIS GPP. *Journal of Geophysical Research* 115:G04025, doi:04010.01029/02010JG001326.
- Thaxton, J.M., Cole, T.C., Cordell, S., Cabin, R.J., Sandquist, D. and **Litton, C.M.** 2010. Native species regeneration following ungulate exclusion and non-native grass removal in a remnant Hawaiian dry forest. *Pacific Science* 64: 533-544.
- Litton, C.M.** and Giardina, C.P. 2008. Belowground carbon flux and partitioning: Global patterns and response to temperature. *Functional Ecology* 22: 941-954.
- Litton, C.M.**, and Kauffman, J.B. 2008. Allometric models for predicting aboveground biomass in two widespread woody plants in Hawaii, U.S.A. *Biotropica* 40: 313-320.
- Litton, C.M.**, Sandquist, D.R. and Cordell, S. 2008. A non-native invasive grass increases soil carbon flux in a Hawaiian tropical dry forest. *Global Change Biology* 14: 726-739.
- Litton, C.M.**, Ryan, M.G. and Raich, J.W. 2007. Review: Carbon allocation patterns in forest ecosystems. *Global Change Biology* 13: 2089-2109.
- Giardina, C.P., **Litton, C.M.**, Thaxton, J.M., Cordell, S., Hadway, L.J. and Sandquist, D.R. 2007. Science driven restoration: A candle in a demon haunted world–Response to Cabin (2007). *Restoration Ecology* 15: 171-176.

REFEREED JOURNAL PUBLICATIONS (PRIOR TO JOINING UHM IN 2007)

- Litton, C.M.**, Sandquist, D.R. and Cordell, S. 2006. Effects of non-native grass invasion on aboveground carbon pools and tree population structure in tropical dry forests of Hawaii. *Forest Ecology and Management* 231: 105-113.
- Litton, C.M.**, Ryan, M.G., & Knight, D.H. 2004. Effects of tree density and stand age on carbon allocation patterns in postfire lodgepole pine. *Ecological Applications* 14(2): 460-475.

- Turner, M.G., Tinker, D.B., Romme, W.H., Kashian, D.K., and **Litton, C.M.** 2004. Landscape patterns of sapling density, leaf area, and aboveground net primary production in postfire lodgepole pine forests, Yellowstone National Park (USA). *Ecosystems* 7: 751-775.
- Litton, C.M.**, Ryan, M.G, Knight, D.H., and Stahl, P.D. 2003. Soil-surface CO₂ efflux and microbial biomass in relation to tree density thirteen years after a stand replacing fire in a lodgepole pine ecosystem. *Global Change Biology* 9: 680-696.
- Litton, C.M.** and Santelices, R. 2003. Effect of wildfire on soil physical and chemical properties in a *Nothofagus glauca* forest. *Revista Chilena de Historia Natural* 76(4): 529-542.
- Litton, C.M.**, Ryan, M.G., Tinker, D.B., and Knight, D.H. 2003. Belowground and aboveground biomass in young postfire lodgepole pine forests of contrasting tree density. *Canadian Journal of Forest Research* 33: 351-363.
- Litton, C.M.** and Santelices, R. 2002. Early postfire succession in a *Nothofagus glauca* forest in the Coastal Cordillera of Chile. *International Journal of Wildland Fire* 11(2): 115-125.
- Litton, C.M.**, Campos, M.O.^{UG}, and Maureira, E.B.^{UG} 1999-2000. Descripción vegetacional de un rodal de *Nothofagus alpina* (P. et E.) Oerst. en la precordillera andina de la VII Región de Chile. *Ciencias Forestales* 14(1-2): 38-49.
- Litton, C.M.** Hernández, J.D.^{UG} and Jiménez, R.L.^{UG} 1997. Composición florística y estructura vertical de un rodal de *Beilschmiedia berteriana* (Gay) Kosterm. en la precordillera andina de la VII Región de Chile. *Bosque* 18(1): 61-72.
- Litton, C.M.** and Santelices, R. 1996. Estudio comparativo de las comunidades vegetales en bosques de *Nothofagus glauca* (Phil.) Krasser en la Séptima Región de Chile. *Bosque*. 17(2): 77-86.
- Santelices, R. and **Litton, C.M.** 1996. Efecto del fuego sobre el bosque, la disponibilidad de nutrientes y la materia orgánica en el suelo. *Ciencia e Investigación Forestal* 10(2): 205-215.

PRESENTATIONS (PRESENTING AUTHOR SINCE 2007; COAUTHOR ON >120 PRESENTATIONS)

- Litton, C.M.**, Cole, R.J., Knauf, A., Long, M.S., Sparks, J.P. and Giardina, C.P. 2016. Impacts of non-native ungulate removal on vegetation & ecological processes: A tale of two sides of the fence. University of Hawaii at Manoa, NREM Seminar Series, Kahalui, HI. (*Invited Talk*).
- Litton, C.M.** 2015. Flux, storage and partitioning of carbon across a mean annual temperature gradient in Hawaiian tropical montane wet forest. Cornell University, Biogeochemistry, Environmental Science and Sustainability Seminar Series, Ithaca, NY. (*Invited Talk*).
- Litton, C.M.**, Giardina, C.P., Selmants, P.C., and Sparks, J.P. 2015. Whole ecosystem warming effects on ecosystem carbon flux, storage & partitioning in tropical forests: Lessons from a highly constrained MAT gradient in Hawaii. International Symposium on Forest Soils, Fujian Normal University, Fuzhou, China. (*Invited Talk*).
- Litton, C.M.**, Giardina, C.P., and Selmants, P.C. 2015. Flux, partitioning and storage of carbon across a mean annual temperature gradient in Hawaiian tropical montane wet forest. Association for Tropical Biology and Conservation Annual Meeting. Honolulu, HI (*Invited Talk*).
- Litton, C.M.**, Long, M.S., Cole, R.J., Sparks, J.P. and Giardina, C.P. 2015. Response of soil physical & chemical properties to removal of feral pigs from Hawaiian montane tropical

- wet forest. Association for Tropical Biology and Conservation Annual Meeting. Honolulu, HI.
- Litton, C.M.**, Hawbaker, T., Trauernicht, C., Giardina, C.P. and Sleeter, B. 2015. Wildfire and carbon in Hawaii. Hawaii Conservation Conference. Hilo, HI. (*Invited Talk*).
- Litton, C.M.**, Cole, R.J., Stewart, M., Hamnett, R., Giardina, C.P. and Sparks, J.P. 2015. Vegetation responses across four Hawaiian ecosystems following removal of non-native ungulates. Hawaii Conservation Conference. Hilo, HI.
- Litton, C.M.**, Giardina, C.P. and Selmants, P.C. 2014. Rising mean annual temperature increases carbon flux & alters partitioning, but does not change ecosystem carbon storage in Hawaiian tropical montane wet forest. American Geophysical Union Fall Meeting. San Francisco, CA.
- Litton, C.M.** 2014. Perspectives on Hawaii's wildfire problem: Research science gaps. Hawaii Conservation Conference. Honolulu, HI.
- Litton, C.M.** and Giardina, C.P. 2013. Ecosystem carbon cycling across a 5.2°C mean annual temperature gradient in Hawaiian tropical montane wet forest. Association for Tropical Biology and Conservation Annual Meeting. San Jose, Costa Rica (*Invited Talk*).
- Litton, C.M.**, Laursen, S.C, Phifer, C. and Giardina, C.P. 2012. Teaching change to local youth: Plant phenology, climate change and citizen science at Hakalau Forest National Wildlife Refuge. American Geophysical Union Annual Meeting, San Francisco, CA
- Litton, C.M.**, Freeman, K.R., Giardina, C.P. and Selmants, P.C. 2012. Effect of mean annual temperature on nutrient return via litterfall in Hawaiian tropical montane wet forest. American Geophysical Union Annual Meeting, San Francisco, CA
- Litton, C.M.** and Cole, R.J. 2012. Vegetation recovery following removal of nonnative feral pigs from Hawaiian tropical montane wet forest. Ecological Society of America Annual Meeting, Portland, OR
- Litton, C.M.** and Giardina, C.P. 2011. The magnitude and variability of soil-surface CO₂ efflux increase with mean annual temperature in Hawaiian tropical montane wet forest. American Geophysical Union Annual Meeting, San Francisco, CA (*Invited Talk*)
- Litton, C.M.**, Giardina, C. and Crow, S.E. 2011. Soil carbon storage does not vary with temperature along a 5.2°C mean annual temperature gradient in Hawaiian tropical montane wet forests. Ecological Society of America Annual Meeting, Austin, TX
- Litton, C.M.**, Giardina, C. and Crow, S.E. 2011. Soil carbon storage with climate change in Hawaiian tropical montane wet forests. Society of American Foresters National Convention, Honolulu, HI
- Litton, C.M.** and Giardina, C. 2011. Increased carbon flux to belowground drives increased soil respiration with rising mean annual temperature. Hawaii Ecosystems Meeting, Hilo, HI
- Litton, C.M.** 2010. Carbon input and partitioning along a 5°C mean annual temperature gradient in Hawaiian wet tropical forests. University of Hawaii at Manoa, Department of Geography, Departmental Seminar Series, Honolulu, HI (*Invited talk*)
- Litton, C.M.** 2010. Ecosystem level impacts of nonnative ungulates in native Hawaiian terrestrial ecosystems. University of Hawaii at Manoa and Institute of Pacific Islands Forestry, Special Seminar for Chinese Scientific Delegation, Hilo, HI (*Invited talk*)
- Litton, C.M.** and Giardina, C. 2010. Carbon input and partitioning across a 5°C mean annual temperature gradient in Hawaiian wet tropical forests. Ecological Society of America Annual Meeting, Pittsburgh, PA

- Litton, C.M.** and Giardina, C. 2010. Carbon partitioning across a 5°C mean annual temperature gradient in Hawaiian wet tropical forests. Hawaii Ecosystems Meeting, Hilo, HI
- Litton, C.M.** 2010. Impacts of nonnative grass invasion on carbon input and allocation in Hawaiian tropical dry forests. Western Society of Weed Science Annual Meeting, Waikoloa, HI (*Invited Talk*)
- Litton, C.M.** and Giardina, C.P. 2009. Carbon input and partitioning across a 5°C mean annual temperature gradient in Hawaiian wet tropical forests. American Geophysical Union Annual Meeting, San Francisco, CA
- Litton, C.M.**, Sandquist, D.R. and Cordell, S. 2009. Impacts of nonnative grass invasion and precipitation variability on carbon partitioning in a Hawaiian tropical dry forest. Ecological Society of America Annual Meeting, Albuquerque, NM
- Litton, C.M.** and Giardina, C.P. 2009. Impact of MAT on ecosystem carbon storage, flux and partitioning in native Hawaiian wet forests. Hawaii Ecosystems Meeting, Hilo, HI
- Litton, C.M.** and Giardina, C.P. 2008. Belowground carbon flux and partitioning: Global patterns and response to temperature. American Geophysical Union Annual Meeting, San Francisco, CA
- Litton, C.M.** and Giardina, C.P. 2008. Impacts of climate change on terrestrial carbon cycling: Infrastructure and research in the Hawaii Experimental Tropical Forest, Laupahoehoe. Hawaii Ecosystems Meeting, Hilo, HI
- Litton, C.M.** 2007. Nonnative grass invasion and ecosystem carbon cycling in Hawaiian dry forests. University of Hawaii at Manoa, Ecology, Evolution and Conservation Biology Graduate Program Seminar Series, Honolulu, HI (*Invited talk*)
- Litton, C.M.** and Kauffman, J.B. 2007. Impact of fire and invasive species on aboveground carbon pools along a precipitation gradient in Hawaiian tropical forests. Ecological Society of America Annual Meeting, San Jose, CA

EDUCATION FUNDING

FUNDED (\$1,711,925; \$1,555,925 AS PI)

- Litton, C.M.** 2017-2018. Teaching Change – Inspiring the next generation of natural resource managers and scientists for Hawaii. Hawaii Community Foundation (Submitted and awarded through the Friends of Hakalau Forest NWR). \$50,000.
- Litton, C.M.**, Koh, M.W., and Giardina C.P. 2016-2018. Training secondary teachers to inspire and empower the next generation of natural resource managers for Hawaii, from Hawaii. USDA-NIFA-AFRI. \$144,775.
- Litton, C.M.** 2016-2017. Teaching Change – Career Pathways to College Level Math and ELA Success. Hawaii P-20 Partnerships for Education, GEAR UP Hawaii Program. \$32,799.
- Litton, C.M.** 2016-2020. The Teaching Change Program: Our Changing Forests Project. USDA Forest Service Research Joint Venture Agreement. \$42,875.
- Litton, C.M.** 2015-2016. Teaching Change – Inspiring the next generation of natural resource managers and scientists for Hawaii. Hawaii Community Foundation (Submitted and awarded through the Friends of Hakalau Forest NWR). \$50,000.
- Litton, C.M.** 2014-2016. Supporting the Teaching Change Program. Kamehameha Schools – Aina-Based Education (Submitted and awarded through the Friends of Hakalau Forest NWR). \$9,307.

- Litton, C.M.** 2014-2016. Supporting the Teaching Change Program. The Learning Coalition (Submitted and awarded through the Friends of Hakalau Forest NWR). \$6,271.
- Litton, C.M.** 2013-2015. Teaching change to local youth: Plant phenology, climate change and citizen science at Hakalau Forest National Wildlife Refuge. Hawaii Community Foundation (Submitted and awarded through the Friends of Hakalau Forest NWR). \$20,000.
- Litton, C.M.** 2012-2016. Using phenology at Hakalau Forest NWR to increase youth interest and participation in conservation biology in Hawaii. Hawaii P-20 Partnerships for Education, College Access Challenge Grant Program. \$169,317.
- Litton, C.M.** (Program Administrator). 2012-2019. Hau'oli Mau Loa Fellows – UH Manoa Graduate Assistantship Funds. Hau'oli Mau Loa Foundation (Awarded to UH Foundation). \$1,022,456.
- Litton, C.M.** 2011-2012. Youth conservation education at Hakalau Forest National Wildlife Refuge, Hawai'i. National Fish and Wildlife Foundation – Nature of Learning Program (Submitted and awarded through the Friends of Hakalau Forest NWR). \$8,125.
- Chan-Halbrendt, C., Evensen, C., Lepczyk, C.A., and **Litton, C.M.** 2010-2015. University of Hawai'i Fellowships for Integrative Training in Sustainable Sciences (UH-FITSS). USDA-NIFA Program. \$156,000.

RESEARCH FUNDING

FUNDED (\$6,122,254; \$4,189,225 AS PI)

- Litton, C.M.**, Cole, R.C., Sparks, J. and Giardina, C.P. 2017-2018. Recovery of native plant communities and ecological processes following removal of nonnative, invasive ungulates from Pacific Island forests. Strategic Environmental Research and Development Program – Department of Defense. \$209,567.
- Trauernicht, C., Cordell, S., **Litton, C.M.**, and Stewart, C. 2015-2017. The Pacific Fire Exchange: A JFSP Fire Exchange for the US Affiliated Pacific Islands. Joint Fire Science Program. \$199,998.
- Litton, C.M.** 2014-2019. Impacts of land use and tree diversity on soil carbon stocks in S.E. Asian mangrove forests. USDA Forest Service Research Joint Venture Agreement. \$178,634.
- Litton, C.M.**, Cole, R.C., Sparks, J. and Giardina, C.P. 2013-2017. Recovery of native plant communities and ecological processes following removal of nonnative, invasive ungulates from Pacific Island forests. Strategic Environmental Research and Development Program – Department of Defense. \$1,094,560.
- Litton, C.M.** 2013-2019. Tropical hardwood tree improvement, regeneration and conservation genetics. USDA Forest Service Research Joint Venture Agreement. \$112,000.
- Ostertag, R., Giambelluca, T., Giardina, C., and Cordell, S., **Litton, C.M.** 2013-2016. Stand level water-use in forests of contrasting rainfall regimes: Assessing the impacts of future drying on native Hawaiian ecosystems. Pacific Islands Climate Science Center – U.S. Department of the Interior. \$164,048.
- Litton, C.M.** and Friday, J.B. 2013-2018. Carbon cycling and storage in Hawaiian terrestrial ecosystems. USDA National Institute of Food and Agriculture, Hatch Program. \$188,100.

- Giambelluca, T., Ostertag, R., **Litton, C.M.**, Fortini, L., Huang, M., Asner, G. and Miyazawa, Y. 2013-2016. Understanding the response of native and non-native forests to climate variability and change to support resource management in Hawaii. Pacific Islands Climate Science Center – U.S. Department of the Interior. \$236,983.
- Litton, C.M.** 2012-2017. Understanding and managing forest change in Hawaii in a rapidly changing world. USDA National Institute of Food and Agriculture, McIntyre-Stennis Forestry Program. \$135,485.
- Litton, C.M.** 2012-2017. Monitoring climate and the impact of rising temperature on belowground processes. USDA Forest Service Research Joint Venture Agreement. \$281,940.
- Litton, C.M.** 2012-2017. Assessing the capacity of a new remote sensing tool to monitor fire risk on Hawaii Island. USDA Forest Service Research Joint Venture Agreement. \$117,022.
- Litton, C.M.**, et al. 2012. Field vehicle to enhance forestry research, extension and instruction on Hawaii Island. CTAHR Capacity Improvement Program. \$35,000.
- Giardina, C.P., Cordell, S., **Litton, C.M.**, Nakahara, M., Pickett, E. and Stewart, C. 2011-2018. The Pacific Fire Science Consortium. Joint Fire Science Program. \$200,000.
- Litton, C.M.** 2011-2016. Quantifying the effects of long-term fragmentation on tropical forest structure and function: Nutrient cycling, forest productivity, and forest mortality. USDA Forest Service Research Joint Venture Agreement. \$179,980.
- Litton, C.M.** and Ellsworth, L.M. 2011-2012. Improved wildfire prediction using remote sensing technology on military grasslands in Hawaii. Joint Fire Science Program. \$24,967.
- Litton, C.M.** and Ellsworth, L.M. 2011-2012. Improved wildfire prediction using remote sensing technology on military grasslands in Hawaii. Department of Defense-Legacy Resource Management Program. \$48,227.
- Litton, C.M.** and Giardina, C.P. 2010. An experimental test of the impacts of rising temperature on carbon input, allocation, and loss in model forests. National Science Foundation Research Experiences for Undergraduates-Ecosystem Science Panel. \$15,000.
- Giambelluca, T., Ostertag, R., **Litton, C.M.**, Giardina, C., and Cordell, S. 2009-2014. Pacific High Island Evolutionary Biogeography: Impacts of invasive species, anthropogenic activity, and climate change on Hawaiian focal species. National Science Foundation – EPSCoR. \$1,132,000 (Sub-award for “Establishment of a climate and ecosystem observatory network”).
- Litton, C.M.** 2009-2011. Impacts of ungulates on nonnative plant invasions and ecosystem structure and function in native forests of Hawai‘i. USDA-CSREES-TSTAR Pacific. \$135,122.
- Litton, C.M.** 2009-2014. Effects of mean annual temperature on carbon storage and fluxes in native forests of Hawai‘i. USDA Forest Service Research Joint Venture Agreement. \$277,569.
- Litton, C.M.** and Giardina, C.P. 2009. An experimental test of the impacts of rising temperature on carbon input, allocation, and loss in model forests. National Science Foundation Research Experiences for Undergraduates-Ecosystem Science Panel. \$13,800.
- Litton, C.M.** and Giardina, C.P. 2008-2010. An experimental test of the impacts of rising temperature on carbon input, allocation, and loss in model forests. National Science Foundation-Ecosystem Science Panel. \$135,000.

- Litton, C.M.** 2008-2009. Hawai'i Experimental Tropical Forest. USDA Forest Service Research Joint Venture Agreement. \$57,160.
- Litton, C.M.** 2008-2011. Independent and interactive impacts of land use change and temperature on belowground carbon cycling. USDA National Institute of Food and Agriculture, McIntyre-Stennis Forestry Program. \$132,265.
- Litton, C.M.** 2008-2013. The potential for restoration to break the grass/fire cycle in dryland ecosystems in Hawaii. USDA Forest Service Research Joint Venture Agreement. \$131,254.
- Litton, C.M.** 2008-2013. The invasive species/wildfire cycle: Fuel loads, microclimate, fire potential, and fire behavior in dominant grasslands and adjacent forests on military lands of Oahu, Hawaii. USDA Forest Service Research Joint Venture Agreement. \$378,983.
- Litton, C.M.** and Friday, J.B. 2008-2011. Ecosystem structure and function in degraded, restored, and intact Hawaiian forests. USDA National Institute of Food and Agriculture, Hatch Program. \$259,680.
- Litton, C.M.,** Giardina, C. and Giambelluca, T. 2008. Infrastructure development for climate change research in Hawaii. University of Hawaii EPSCoR REAP Program. \$24,944.
- Litton, C.M.** 2008. Relationships of an alien plant, fuel dynamics, fire weather and unprecedented wildfires in Hawaiian rain forests: Implications for fire management at Hawaii Volcanoes National Park. Oregon State University (Subcontract from a Joint Fire Sciences Program project). \$22,966.

TEACHING EXPERIENCE

- 2016-present **Co-Instructor**, *Conservation Biology* (BOT/NREM/ZOOL 690) (co-developed, coordinated and taught classroom lectures), University of Hawaii at Manoa
- 2009-present **Instructor**, *Applied Forest Ecology* (NREM 480) (developed, coordinated and taught classroom lectures and laboratory activities), University of Hawaii at Manoa
- 2008-present **Instructor**, *Restoration Ecology* (NREM 682) (developed, coordinated and taught classroom lectures), University of Hawaii at Manoa
- 2008-present **Instructor**, *Ecosystem Ecology* (NREM 680) (developed, coordinated and taught classroom lectures and laboratory exercises), University of Hawaii at Manoa
- 2008-present **Co-Instructor**, *Natural Resource Management* (NREM 301+L) (developed, coordinated and taught classroom lectures and laboratory exercises), University of Hawaii at Manoa
- 2001 **Co-Instructor**, Life Sciences (coordinated and taught classroom lectures and laboratories), University of Wyoming
- 1995-1998 **Instructor**, *Geographic Information Systems (GIS)*, *Dendrology*, and *Forest Ecology* (developed, coordinated and taught classroom lectures and laboratories), Universidad Católica del Maule, Chile

STUDENT TRAINING EXPERIENCE (SINCE 2007)

POSTDOCTORAL RESEARCHERS

- 2013-present Dr. Rebecca J. Cole (Recovery of native plant communities & ecological processes following removal of nonnative, invasive ungulates)
- 2015-present Dr. Sahadev Sharma (Impacts of land use and mangrove tree diversity on soil carbon stocks in SE Asian mangrove forests; Co-advised with Dr. Richard MacKenzie)
- 2012-2016 Dr. Paul C. Selmants (An experimental test of the impacts of rising temperature on carbon input, allocation, and loss in model forests; Co-advised with Dr. Christian P. Giardina)
- 2011-2014 Dr. Andrew Pierce (The invasive species/wildfire cycle: Fuel loads, microclimate, fire potential, and fire behavior on military lands of Hawaii; Co-advised with Dr. Christian P. Giardina and Dr. Susan Cordell)
- 2010-2011 Dr. Rebecca J. Cole (Impacts of nonnative ungulates on nonnative plant invasions and ecosystem structure and function in native forests of Hawai'i)
- 2010-2011 Dr. Kristen R. Freeman (An experimental test of the impacts of rising temperature on carbon input, allocation, and loss in model forests; Co-advised with Dr. Christian P. Giardina)

GRADUATE STUDENTS (ALL AT THE UNIVERSITY OF HAWAII AT MANOA; CURRENT STUDENTS)

- 2007-present **Committee Chair** (all in NREM): Selita Ammond (M.S.; graduated 12/10), Jared Char (M.S. Plan B), Mark Chynoweth (M.S.; Co-advisor; graduated 8/12), Wailea Collins (M.S. Plan B; Co-advisor), Lisa Ellsworth (Ph.D.; graduated 12/12), Edward Evans (M.S. Plan B; graduated 12/11), Darcey Iwashita (M.S.; graduated 8/12), Amanda Knauf (M.S.), Jon Lance (M.S. Plan B; graduated 5/14), Ben Laws (M.S.), Michael Long (M.S.), Endri Martini (M.S. Plan B; graduated 5/11), Dana Ogle (M.S. Plan B; graduated 05/09), Ryan Pe'a (M.S. Plan B; graduated 5/16), Kelly Powell (M.S. Plan B; graduated 5/13), Julia Rowe (Ph.D.), Billy Sale (M.S. Plan B; graduated 12/12), Stacey Torigoe (M.S. Plan B), Elizabeth Weidenhaft (M.S. Plan B; graduated 12/12), Melissa Valdez (M.S. Plan B; graduated 5/15), Nate Wehr (M.S. Plan A), Nick Wilhoite (M.S. Plan B; Co-Advisor; graduated 5/14), Tim Zhu (M.S. Plan A)
- 2007-present **Committee Member**: Courtney Angelo (Ph.D., Botany; graduated 5/12), Victor Bovino (M.S., NREM; graduated 12/11), John Delay (Ph.D., Geography; graduated 5/16), Deidre Duffy (M.S., NREM; graduated 5/10), Dashiell Dunkell (M.S., NREM; graduated 5/09), Rong Fang (M.S., Geography; graduated 5/15), Abby Frazier (Ph.D., Geography; graduated 8/16), Georgia Hart (Ph.D., Botany), Aurora Kagawa (Ph.D., Geography), Jerry Koko (Ph.D., Botany), Ryan Longman (M.S., Geography; graduated 12/11), Rodolfo Martínez-Morales (Ph.D., NREM; graduated 5/10), Ryan Mudd (Ph.D., Geography), Cynthia Nazario-Leary (Ph.D., NREM; graduated 5/14), Sue Pierre (Ph.D., Cornell University), Majah-Leah Villar Ravago (Ph.D., Economics; graduated 12/11), Cari Ritzenthaler (M.S., Bowling Green State University, graduated 5/17), Yudai Sumiyoshi (M.S., NREM, graduated 12/12), Tiffany Thair (M.S., Botany; graduated 12/11), Carolyn Unser (M.S., NREM; graduated 5/09), Will Weaver (M.S. NREM, graduated 5/17); Adel Youkhana (Ph.D., NREM; graduated 5/10), and Mary Younkin (M.S. NREM; graduated 8/13).

UNDERGRADUATE STUDENTS (CURRENT STUDENTS)

- 2007-present **Academic Advisor** for NREM students: Scott Arnett (Graduated 05/10), Nanea Babila, Alicia Chappell, ‘Olana Sidney Chow (Graduated 5/17), Scott Chulakote (Graduated 12/14), Derek Ford (Graduated 12/12), Emily Guynn (Graduated 5/14), Aliah Irvine (Graduated 12/13), Kristen Jamieson (Graduated 05/16), Candide Krieger, Kūpa‘a Luet-Hueu, Bryson Luke (Graduated 05/09), Randy Pilar (Graduated 5/14), Tiziana Ruiz, Yudai Sumiyoshi (Graduated 12/09), and Kamuela Warner (Graduated 05/13).
- 2010-2013 **Faculty Mentor** for Kahuewai Ola Native Hawaiian STEM Scholars Program (NREM students Kamuela Warner (Graduated 5/14) and Aliah Irvine).
- 2016 **Co-Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences: Shaun Wriston – *Effect of Acacia koa on soil nutrient supply in a Hawaiian forest*
- 2015 **Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences: Melanie Quiñones – *Photosynthetic responses of native vs. non-native, invasive Hawaiian wet forest plants under varying soil nutrient availabilities*
- 2015 **Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences: Cyra Macanas – *Growth responses of native and invasive Hawaiian wet forest plants under varying soil nutrient availability*
- 2014 **Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences: Taylor Tomita – *Vegetation recovery after non-native ungulate removal from tropical montane dry shrubland*
- 2012 **Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences: Lori Bothwell – *Leaf litter decomposition and temperature in Hawaiian tropical montane wet forests*
- 2011 **Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences: Manoa Johansen – *The impact of nonnative feral pigs on soil surface CO₂ efflux in Hawaiian tropical wet forest*
- 2010 **Mentor** for NSF-REU and University of Hawaii–Pacific Internship Program for Exploring Sciences: Olivia Schubert – *The impact of rising temperatures on soil nitrogen availability in a Hawaiian tropical wet forest*
- 2010 **Mentor** for NSF-REU and University of Hawaii–Pacific Internship Program for Exploring Sciences: Joey Quitan – *Contribution of coarse woody debris to carbon storage across a 5°C mean annual temperature gradient in Hawaiian wet tropical forests*
- 2010 **Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences: Molly Murphy-Winters – *The growth and mortality of Cibotium in a native Hawaiian wet forest impacted by feral pigs*
- 2009 **Mentor** for NSF-REU and University of Hawaii–Pacific Internship Program for Exploring Sciences: Jeremy K. Albano – *Spatial and temporal variability of soil respiration along a mean annual temperature gradient in wet Hawaiian forests*
- 2009 **Mentor** for NSF-REU and University of Hawaii–Pacific Internship Program for Exploring Sciences: Darcey K. Iwashita – *Plant biodiversity along a mean annual temperature gradient in wet Hawaiian forests*

- 2009 **Mentor** for Angela Stevens, Mataia Reeves, and Bryson Luke – *The invasive species/wildfire cycle: Fuel loads, microclimate, fire potential, and fire behavior in dominant grasslands and adjacent forests*
- 2008 **Co-Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences; Reid Loo, Mina Viritua, and Kaimikila Moraes, University of Hawaii at Hilo – *Kanakaleonui Bird Corridor Permanent Plot Installation*
- 2006 **Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences; Cindy Dupuis, University of Hawaii at Hilo – *Effects of an invasive fern on aboveground carbon pools in vegetation and detritus in mesic `Ōhi`a forests, Hawai`i Volcanoes National Park*
- 2005 **Mentor** for University of Hawaii–Pacific Internship Program for Exploring Sciences; Kolea Zimmerman, Duke University – *Conversion of tropical dry forests to open grasslands: Effects on biomass and soil respiration*
- 2004-2005 **Mentor** for National Science Foundation REU Program; Bhama Paritosh, University of Hawaii at Hilo – *Physiological response to water stress by the Hawaiian dry forest endemic Pleomele hawaiiensis*
- 2003-2004 **Mentor** for National Science Foundation REU Program; Carlos Torres, University of Hawaii at Hilo – *Impact of nonnative grass invasion on sapflow in tropical dry forests of Hawaii*
- 1995-1998 **Advisor** for Senior-year Undergraduate Research Projects at the Universidad Católica del Maule ($n = 10$ students)

DEPARTMENT, COLLEGE, AND UNIVERSITY SERVICE

- 2017-present. Undergraduate Research Opportunity (UROP) Council Co-Chair, Office of Undergraduate Education, University of Hawaii at Manoa.
2016. Nominated for Interim Dean of the College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.
- 2016-present. Proposal reviewer for the Undergraduate Research Opportunity (UROP) Council, Office of Undergraduate Education, University of Hawaii at Manoa
- 2015-present. Research Advisory Council (Co-lead on Working Group *Enabling and Supporting Student Research*), Office of the Vice Chancellor of Research, University of Hawaii at Manoa.
- 2015-2016. Search Committee Member, Hawaii County Administrator, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.
2015. Search Committee Member, Administrative and Fiscal APT, Department of Natural Resources & Environmental Management, University of Hawaii at Manoa.
- 2014-present. Departmental Personnel Committee, Department of Natural Resources & Environmental Management, University of Hawaii at Manoa (Recused for AY 16-17).
2014. Search Committee Member (Associate Dean and Director of Research), College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.
2013. Faculty Search Committee Chair (Soil Ecology and Biogeochemistry), Department of Natural Resources & Environmental Management, University of Hawaii at Manoa.
- 2013-2014. Board of Regents/Chancellor's Excellence in Teaching Award Selection Committee, University of Hawaii at Manoa.

- 2013-2014. Strategic Planning Committee (Pre-Award Support Working Group), College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.
- 2013-2015. Curriculum Committee (Committee Chair 2013-2014), Department of Natural Resources & Environmental Management, University of Hawaii at Manoa.
- 2013-2015. Strategic Planning Committee (Sustainability Working Group), University of Hawaii at Manoa.
- 2012-2013. Strategic Planning Committee (*Engaged Scholarship* Working Group), University of Hawaii at Manoa.
- 2012-present. Office of Research Services Faculty Advisory Council (UXI Working Group for MyGrant interface; Subaward Policy Working Group), University of Hawaii at Manoa.
- 2012-present. Faculty Recruitment and Retention Committee for the Ecology, Evolution and Conservation Biology Program, University of Hawaii at Manoa.
2011. Faculty Search Committee Member (Human Dimensions of Natural Resource Management), Department of Natural Resources & Environmental Management, University of Hawaii at Manoa.
- 2008-2013. Graduate Program Committee Member, Department of Natural Resources & Environmental Management, University of Hawaii at Manoa.
- 2008- 2012 and 2013-2015. Judge for the Annual CTAHR Student Research Symposium, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.
- 2008-2010. Student Admissions Committee for the Ecology, Evolution and Conservation Biology Program (Chair 2009-2010), University of Hawaii at Manoa,

PROFESSIONAL SERVICE

2016. Organizing Committee, “*Acacia koa* in Hawaii: Facing the Future” Symposium.
2015. Judge for Student Oral and Poster Presentations, Hawaii Conservation Conference.
2015. Organizing Committee, Association for Tropical Biology and Conservation Annual Meeting.
- 2013-2016. Leadership Committee, Hawaii Carbon Assessment.
2013. Judge for Student Oral and Poster Presentations, Hawaii Conservation Conference.
2011. Reviewer for Student Travel Awards, Physiological Ecology Section, Ecological Society of America Annual Meeting.
- 2011-present. Steering Committee, Pacific Fire Exchange (PFX).
- 2010-present. Leadership Committee, Tropical Hardwood Tree Improvement and Regeneration Center (Tropical HTIRC).
2010. Scoping Committee, Tropical Hardwood Tree Improvement and Regeneration Center (Tropical HTIRC) Workshop.
- 2009-present. Domain Science and Education Coordination Committee (DSECC) for Domain 20 (Pacific Tropical), National Ecological Observatory Network (NEON).
- 2009-2014 and 2015-present. Board of Directors (Vice President 2010-2012; Grants Coordinator 2012-present), Friends of Hakalau Forest National Wildlife Refuge,
- 2008-2009. Board of Directors, Hawaii Organic Farmers Association (HOFA).
- 2008-2012. Judge for Graduate Student Oral and Poster Presentations, Physiological Ecology Section, Ecological Society of America Annual Meeting.

JOURNAL REVIEWER

Nature, Ecological Applications, Ecosystems, Global Change Biology, New Phytologist, Functional Ecology, Journal of Geophysical Research – Biogeosciences, Environmental Research Letters, Tree Physiology, Biological Conservation, Forest Ecology and Management, Canadian Journal of Forest Research, Restoration Ecology, Biotropica, Journal of Arid Environments, Oecologia, Plant and Soil, Plant Ecology, Journal of Biogeography, Arid Lands Research and Management, Pacific Science, North American Journal of Fisheries Management, F1000

PROFESSIONAL MEMBERSHIPS

American Geophysical Union (AGU), Association for Tropical Biology and Conservation (ATBC), Ecological Society of America (ESA), Society of American Foresters (SAF)

PROPOSAL REVIEWER

National Science Foundation – Ecosystem Studies Program; Department of Energy – National Institute for Climate Change Research; Department of Defense – Strategic Environmental Research and Development Program; USDA McIntire-Stennis Program; Fondo Nacional de Desarrollo Científico y Tecnológico (FONDECYT, Chile) – Ecology and Environmental Sciences; National Geographic Society