SUSAN E. CROW
Curriculum Vitae- July 2015

Department of Natural Resources and Environmental Management
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RESEARCH AND TEACHING INTERESTS

Soil Ecology and Biogeochemistry: carbon dynamics and sequestration, greenhouse gas flux, nutrient and water management in natural and managed (forested or agriculture) ecosystems and how these relate to global change pressures - such as land-use, climate change, and invasive species - sustainable agriculture, and renewable energy production.

PROFESSIONAL APPOINTMENTS

2012-present	**Assistant Professor**, Department of Natural Resources and Environmental Management, University of Hawaii Manoa
2011-present	**Affiliate Researcher**, Water Resources Research Center, University of Hawaii at Manoa
2009-present	**Graduate Faculty**, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa
2009-2012	**Assistant Researcher**, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa
2007-2009	**Research Fellow**, ^{14}CHRONO Centre for Climate, the Environment, and Chronology, Queen's University Belfast

EDUCATION

2007	**Postdoctoral Researcher,** Department of Earth, Atmospheric, and Planetary Sciences, Purdue University
2006	**Ph.D**., emphasis in Ecology, Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR.
2001	**M.S.,** Biology, Villanova University, Villanova, PA.
1999	**B.S.,** Biology, College of William and Mary, Williamsburg, VA.

GRANT FUNDING

EXTRAMURAL FUNDED (TOTAL = $2,299,728; **$2,299,728 AS LEAD P.I.**)

Parameterization of two simulation models (ALMANAC and SWAT) in Hawaii with subsequent parallelization of the SWAT model. USDA-ARS. **S. E. Crow** (PI), funded for $1,201,728, 10/1/2012-12/31/2015.

Rapid assessment of soil carbon project assistance for the Hawaiian Islands. United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS), **S. E. Crow** (Principle Investigator), funded for $75,000, 9/1/2012-8/31/2015.

Practical benefits of biochar amendment to agricultural systems: Linking soil and microbial processes to economic feasibility and sustainability. USDA-NIFA Foundational Grants

Program. **S. E. Crow** (Project Director, PD), J. Deenik (co-PD), J. Yanagida (co-PD), C. R. Penton (co-PD), J. Tiedje (co-PD), and M. Simpson (co-Investigator), funded for $480,000, 5/1/2012-4/30/2016.

Water and carbon footprint and plant parameters of biofuel production on the HC&S sugarcane lands on Maui, Hawaii. USDA-ARS. **S. E. Crow** (PI), funded for $543,000, 8/19/2011-8/18/2016.

INTERNAL FUNDED (TOTAL = $738,928; **$399,198 AS LEAD P.I.**)

Carbon cycling and storage in Hawaiian Ecosystems: Tropical forest soil carbon formation and decomposition with rising mean annual temperature. USDA Hatch Supplemental Funds. C. M. Litton (PI), J. B. Friday (co-PI), P. C. Selmants (co-PI), and **S. E. Crow** (co-PI), $49,730, 10/1/13-9/30/15.

Can microbial-derived nitrogen be used as a fertilizer for organic farming? USDA Hatch Supplemental Funds, S. Khanal (PI), T. Radovich (co-PI), **S. E. Crow** (co-PI), C. Tamaru (co-PI), D. Takara (co-PI), $50,000, 10/1/13-9/30/15.

Improving efficiency and depth of analytical capacity for process-level carbon and nutrient cycle research for environmental management and sustainability. CTAHR Research Instrumentation Award. **S. E. Crow** (PI), J. Deenik (co-PI), and S. Khanal (co-PI), funded for $221,000, 6/30/12-7/1/13.

Sustainable food production: Response of root crops and soil carbon resources to the atmospheric pCO_2 estimates of the next 300 years. CTAHR Catalyst Funds. J. Deenik (PI), H. Jahren (co-PI), **S. E. Crow** (co-PI) and W. Hockaday (co-PI), funded for $160,000, 7/1/11-6/30/13.

Inclusion of carbon and greenhouse gas tradeoffs on life cycle analysis of biomass production systems, Center for BioEnergy Research and Development (CBERD), NSF Industry/University Cooperative Research Center. **S. E. Crow** (sub award P.I), funded for $178,198, 10/1/09-6/30/13.

Impact of temperature on soil carbon sequestration and quality in native tropical forest and managed pasture. USDA Hatch Supplemental Funds. C. Litton, (PI), J. B. Friday (co-PI), and **S. E. Crow** (co-PI), funded for $80,000, 10/1/09-9/30/12.

FUNDED COLLABORATIVE GRANTS, NON-PI OR CO-PI STATUS, **(**TOTAL = $9,288,467; **CROW BUDGET TOTAL = $466,000**)

Development of high yield tropical feedstocks and biomass conversion technology for renewable energy production and economic development; US DOE. Awarded to A. Hashimoto (lead P.I.), total award $7,500,000; **S.E. Crow** (C sequestration Task Leader) dedicated budget $464,000, 10/1/2009-9/30/2012

Sustainable management of agroecological resources for tribal societies (SMARTS). SANREM/USAID CRSP. C. Chan-Halbrendt (PI), C. Ray (co-PI), T. Idol (co-PI); **S. E. Crow** (Collaborative Researcher), funded for $1,380,000, 1/1/2010-12/31/2015.

Collaborative Research: Investigating the soil-earthworm-litter system controls on the stabilization of soil organic matter in eastern deciduous forests, National Science Foundation, EAR. T. Filley (lead P.I.), funded for $408,467, **S. E. Crow** (named collaborative researcher) $12,000 in contract research funds, 9/15/2008-9/14/2011.

FELLOWSHIPS AND AWARDS

Springer Science and Business Media "Excellence in Reviewing" for service to *Biogeochemistry* in 2013.

Springer Publishing Award for Excellence (Oral presentation), American Geophysical Union Meeting 2013, Session: Soil organic matter dynamics in the Anthropocene.

NSF-CZEN International Scholars Fellowship – Title: Decomposing Arctic Soils; Potential Effects of Warmer Climate on Soil Organic Matter Turnover and Chemistry in the Svalbard Archipelago Tundra, $9,040 funded for travel and research, 2007.

Tropical Ecosystems Research Fellowship - Forest Science Department, Oregon State University, 2004 and 2005 academic years.

Honorable Mention, Student Oral Presentation, BIOGEOMON 4th International Symposium on Ecosystem Behaviour, University of Reading, UK, Summer 2002.

Travel Award from the Botany and Plant Pathology - Graduate Student Association, Oregon State University, Spring 2002 and 2005.

Academic Year Research Fellowship in Biology, Villanova University, Fall 2000 - Spring 2001.

Summer Research Fellowship, Villanova University, Summer 2000 and 2001.

PUBLICATIONS

PEER-REVIEWED JOURNAL PUBLICATIONS (*UH graduate student, **UH undergraduate student)

Meki, M. N., J. R. Kiniry, A. H. Youkhana, **S. E. Crow**, R. M. Ogoshi, M. Nakahata, R. Tirado-Corbala, R. G. Anderson, J. Osorio, and J. Jeong. 2015. Key crop growth parameters for modeling two-year cycle sugarcane. Journal of Agronomy 107: 1310-1320.

Crow, S. E., M. Reeves*, O. Schubert, and C. Sierra. 2015. Optimization of method to quantify soil organic matter dynamics and carbon sequestration potential in volcanic ash soils. Biogeochemistry 123: 27-47.

Silva, J.H.S.*, J.L. Deenik, R.S. Yost, G.L. Bruland, and **S.E. Crow**. 2015. Improving clay measurement in oxidic and volcanic ash soil of Hawaii by increasing dispersant concentration and ultrasonic energy levels. Geoderma 237-238: 211-223.

Frey, S. D., S. Ollinger, K. Nadelhoffer, R. Bowden, E. Brzostek, A. Burton, B. A. Caldwell, **S. Crow**, C. Goodale, S. Grandy, A. Finzi, M. Kramer, K. Lajtha, J. LeMoine, M. Martin, W. McDowell, R. Minocha, J. Sadowsky, P. Templer, and K. Wicking. 2014. Chronic nitrogen additions suppress decomposition and sequester carbon in temperate forests. Biogeochemistry 121:305-316.

VanderWerf, E. A., L. C. Young, **S. E. Crow**, E. Opie**, H. Yamazaki*, C. J. Miller, D. G. Anderson, L. S. Brown, D. G. Smith, and J. Eijzenga. 2014. Increase in Wedge-tailed Shearwaters and changes in soil nutrients following removal of alien mammalian predators and nitrogen-fixing plants at Kaena Point, Hawaii. Restoration Ecology 22:676-684.

Giardina, C. P., C. M. Litton, **S. E. Crow,** and G. P. Asner. 2014. Warming-related increases in soil CO_2 efflux are explained by increased below-ground carbon flux. Nature Climate Change 4: 822-827.

Briones, M. J., N. McNamara, J. Poskitt, **S. E. Crow**, and N. Ostle. 2014. Interactive biotic and abiotic regulators of soil carbon cycling: evidence from controlled climate experiments on peatland and boreal soils. Global Change Biology 20: 2971-2982.

Halbrendt, J.*, S. Gray, **S. E. Crow**, T. Radovich, B. B. Tamang, A. H. Kimura. 2014. Differences in farmer and expert beliefs and the perceived impacts of conservation agriculture. Global Environmental Change 28: 50-62.

Ma, Y.*, T. R. Filley, C. T Johnston, **S. E. Crow,** K. Szlavecz, and M. McCormick. 2013. The combined controls of land use legacy and earthworm activity on soil organic matter chemistry and particle association during afforestation. *Organic Geochemistry* 58: 56-68.

Ware, S. A., **S. E. Crow**, and B. A. Waitman. 2011. Mode of substrate adaptation in rock outcrop plants: *Cyperus aristatus* Rottb. and *Cyperus granitophius* McVaugh. Castanea 76:415-423.

Crow, S. E., K. Lajtha, R. D. Bowden, Y.Yano, J. B. Brant, B. A. Caldwell, E. W. Sulzman. 2009. Increased coniferous needle inputs accelerate decomposition of soil carbon in an old-growth forest. *Forest Ecology and Management* 258: 2224-2232.

Crow, S. E. and S. Ware. 2009. Soil type tolerance in rock outcrop plant communities: *Satureja arkansana* (Nutt.) Briq. (Lamiaceae) in the Ozarks. *The Journal of the Torrey Botanical Society* 136: 363-368.

Crow, S. E., K. Lajtha, T. R. Filley, C. Swanston, B. Caldwell, R. D. Bowden. 2009. Sources of plant-derived carbon and stability of soil organic matter: implications for global change. *Global Change Biology* 15: 2003-2019.

Crow, S. E., T. R. Filley, M. McCormick, K. Szlavecz, D. E. Stott, D. Gamblin, and G. Conyers. 2009. Earthworms, stand age, and species composition interact to influence particulate organic matter chemistry during forest succession. *Biogeochemistry* 92: 61-82.

Turetsky, M. R., **S. E. Crow**, B. Evans, D. L. Vitt, R. K. Wieder. 2008. Trade-offs in resource allocation among moss species control decomposition in boreal peatlands. *Journal of Ecology* 96:1297-1305.

Filley, T. R., M. K. McCormick, **S. E. Crow**, K. Szlavecz, D. F. Whigham, C. T. Johnston, R. N. van den Heuval. 2008. Comparison of the chemical alteration trajectory of *Liriodendron tulipifera L.* litter among forests with different invasive earthworm activity. *Journal of Geophysical Research*, 113, G01027, http://dx.doi.org/10.1029/2007JG000542.

Beldin, S. I., B. A. Caldwell, P. Sollins, E. W. Sulzman, K. Lajtha, and **S. E. Crow**. 2007. Cation exchange capacity of density fractions from paired conifer/grassland soils. *Biology and Fertility of Soil* 43: 837-841.

Crow, S. E., C. Swanston, K. Lajtha, J. R. Brooks, and H. Keirstead. 2007. Density fractionation of forest soils: Methodological questions and interpretation of incubation results and turnover time in an ecosystem context. *Biogeochemistry* 85: 69-90.

Crow, S. E. and S. Ware. 2007. Soil type tolerance in rock outcrop plants: species of non-calcareous substrates. *The Southwestern Naturalist* 52:120-125.

Sollins, P., C. Swanston, T. Filley, M. Kleber, M. Kramer, **S. E. Crow**, B. Caldwell, K. Lajtha, and R. D. Bowden. 2006. Organic C and N stabilization in a forest soil: evidence from sequential density fractionation. *Soil Biology and Biochemistry* 38: 3313-3324.

Crow, S. E., E. W. Sulzman, W. D. Rugh, R. D. Bowden, and K. Lajtha. 2006. Isotopic analysis of respired CO_2 during decomposition of separated soil organic matter pools. *Soil Biology and Biochemistry* 38: 3279-3291.

Lajtha, K., **S. E. Crow**, Y. Yano, S. S. Kaushal E. Sulzman, P. Sollins, and J. D. H. Spears. 2005. Detrital controls on soil solution N and dissolved organic matter in soils: a field experiment. *Biogeochemistry* 76: 261-281.

Holub, S. M., K. Lajtha, J. D. H. Spears, J. A. Tóth, **S. E. Crow**, B. A.Caldwell, M. Papp, and P. T. Nagy. 2005. Organic matter manipulations have little effect on gross and net nitrogen transformations in two temperate forest mineral soils in the U.S.A and central Europe. *Forest Ecology and Management* 214: 320-330.

Crow, S. E., and R. K. Wieder. 2005. Sources of CO_2 emission from a northern peatland: root respiration, exudation and decomposition. *Ecology* 86: 1825-1834.

BOOK CHAPTERS

Paudel, B., T.* Radovich, **S. E. Crow**, K. Thapa, J. Halbrendt*, C. Chan-Halbrendt, B. B. Tamang. 2015. Potential of conservation agriculture production system (CAPS) for improving sustainable food and nutritional security in hilly regions of Nepal. Chapter 3, pp. 55-76. In Conservation Agriculture in Subsistence Farming: Case Studies from South Asia and Beyond, Eds. C. Chan and J. Fantle-Lepczyk, CAB International.

Crow, S. E., B. B. Tamang, O. Schubert, T. Radovich, B. Paudel*, J. Halbrendt*, and K. Thapa. 2015. Soil quality and sustainable production in conservation agriculture production systems (CAPS) of rainfed, sloping land farming of the mid-hills region of Nepal. Chapter 9, pp. 171-206. In Conservation Agriculture in Subsistence Farming: Case Studies from South Asia and Beyond, Eds. C. Chan and J. Fantle-Lepczyk, CAB International.

Meki, M. N., J. R. Kiniry, K. D. Behrman, M. N. Pawlowski*, and **S. E. Crow**. 2014. The role of simulation models in monitoring soil organic carbon storage and greenhouse gas mitigation potential in bioenergy cropping systems. Book Article in CO_2 Sequestration and Valorization, Ed. V. Esteves, InTech.

EXTENDED ABSTRACTS

Paudel, B.*, T. Radovich, C. Chan-Halbrendt, B. B. Tamang, **S. E. Crow,** J. Halbrendt*, K. Thapa. 2014. Effect of conservation agriculture on maize-based farming system in the mid-hills of Nepal. Humanitarian Technology: Science, Systems and Global Impact 2014, HumTech2014. Proceedia Engineering 78: 327-336.

Paudel, B.*, T. Radovich, **S. E. Crow**, J. Halbrendt*, C. Chan-Halbrendt, B. B. Tamang, and K. Thapa. 2014. Using competition ratios and total revenue parameters to assess millet and legume intercropping under conservation agriculture production systems in Nepal. Proceedings from the International Conference "Frontiers in Conservation Agriculture in South Asia and Beyond (F-CASA), Kathmandu, Nepal.

Hashimoto, A., J. Arnold, J. Ayars, **S. Crow**, T. Eggeman, L. Jakeway, M. Karkee, S. Khanal, J. Kiniry, J. Matsunaga, N. Meki, G. Murthy, M. Nakahata, R. Ogoshi, B. Turano, S. Turn, J. Yanagida, Q. Zhang. 2012. High-Yield Tropical Biomass for Advanced Biofuels. Sun Grant National Conference, New Orleans, LA, October 3-5, 2012.

Davis, A. A.*, C. A. Lepczyk, **S. E. Crow**, C. W. Morden. 2012. *Toxoplasma gondii* detection in urban Hawaii. Proceedings of the 25th Vertebrate Pest Conference (R. M. Timm, Ed.). University of California Davis. Pp. 251-255.

IN REVIEW (*UH graduate student, **UH undergraduate student)

Crow, S.E., M.I. Reeves*, S. Turn, S. Taniguchi*, O. S. Schubert, M. Lazaro*, T. Miura, N. Koch. *In revision, post-review* at Carbon Management. Carbon balance of *Eucalyptus*

grandis production including land use change from pasture to managed plantation in Hawaii.

Wells, J.*, **S. E. Crow**, R. Ogoshi, B. Turano, A. Hashimoto. *In review* at Biomass and Bioenergy. Novel application of CuO oxidative products on C4 grass feedstock selection for biofuels.

Paudel*, B., T. J. Radovich, C. Chan, **S. E. Crow**, J. Halbrendt*, G. Norton, B. B. Tamang, and K. Thapa. *In review* at Soil and Water. Bio-economic optimization of conservation agriculture production systems (CAPS) for smallholder tribal farmers in the hill region of Nepal.

IN PREPARATION (FULL DRAFT AVAILABLE, *GRADUATE STUDENT, **UNDERGRADUATE STUDENT)

Meki, M. N., R. M. Ogoshi, J. R. Kiniry, **S. E. Crow**, A. H. Youkhana, and M. Nakahata. A comparative performance evaluation of biomass sorghum in Hawaii and Texas. *In preparation for Agronomy Journal*.

Crow, S. E.†, Y. Sumiyoshi*†, , A. Taylor, C.M. Litton, J.L. Deenik, B. Turano, and R. Ogoshi. Belowground impact of napier and guinea grasses grown for biofuel feedstock production. *In preparation for Global Change Biology Bioenergy*. † Shared first authorship**.**

Deem, L.*, **S. E. Crow**, Y. Sumiyoshi*, H. Yamazaki*, N. Hunter**, J. Wells*, J. Deenik, R. Ogoshi, B. Turano. Soil carbon dynamics following conversion to tropical perennial grass feedstocks for biofuel from fallow. *In preparation for Agriculture, Ecosystems, and the Environment.*

Crow, S. E., M. Pawlowski*, M.N. Meki, J. Kiniry, A. Taylor, and R. Ogoshi. Soil and water conservation practice effects on global warming potential, root and soil carbon stocks and dynamics in sugarcane and Napier grass grown for bioenergy production. *In preparation for Agronomy Journal*.

Czeck, B.C.*, A.H. Jahren, J.L. Deenik, M. Stewart, **S.E. Crow**, and B. Schubert. Growth, yield, and nutritional concentration of sweet potato grown under CO_2 concentrations projected for the next 150 years. *In preparation for Science of the Total Environment.*

PROFESSIONAL PRESENTATIONS

INVITED WORKSHOPS AND PRESENTATIONS

2015 Invited Oral Presentation: Crow, S. E., *et al*. Soil organic matter stabilization/destabilization in DIRT. ASA, CSSA, and SSSA Annual Meeting, Minneapolis, MN, November 2015.

2013 Invited Oral Presentation: Crow, S. E., M. Lazaro*, M. Reeves, C. M. Litton, C. P. Giardina, and J. Wells. Extraordinary soils give insight into the role of non-crystalline minerals in soil carbon response to climate and land use change. American Geophysical Union Annual Meeting, San Francisco, CA

2012 "Emerging Scientist" Selectee: "Early Career" scientist invited to present research and perspectives at the 5th International Workshop on Soil and Sedimentary Organic Matter Stabilization and Destabilization, Ascona, Switzerland, October 2012.

2011 Workshop Participant: Radiocarbon Database Workshop, National Soil Carbon Network, building a national database for radiocarbon-based research, hosted by Lawrence Berkeley National Laboratory, Berkeley, CA.

2009 Invited Oral Presentation: Crow, S. E., Lajtha, K., Kramer, M. G., and Caldwell, B. A. Twenty years of chronic nitrogen additions to pine and mixed hardwood stands at Harvard Forest: effects on carbon balance and dynamics differ by vegetation. American Geophysical Union Annual Meeting, San Francisco, CA

2008 Invited Oral Presentation: Crow, S. E., R. D. Bowden, B. Caldwell, T. Filley, K. Lajtha, J. Brant, E. Sulzman. Sources of long-term soil organic matter varies by forest type; but how stable is it? North American Forest Soil Conference, Blacksburg, VA.

INVITED SEMINARS

Carbon cycle and the soil resource: from mechanism to management. University of New Hampshire, Department of Natural Resources & the Environment, Graduate seminar series in Soil Change, February, 2014.

Biofuel production in Hawaii: Greenhouse gas flux, carbon budget, and achieving environmental and economic sustainability. University of Hawaii Manoa, Molecular Biosciences and Bioengineering Department, Graduate Seminar Series: Bioenergy Topics, September 2013.

Global change and soils: Invasive earthworms, arctic shrubs, and Acrudoxic Hydrudands. University of Hawaii Manoa, Geology and Geophysics Departmental seminar series, October 2010.

Ecosystems under pressure: soil carbon sources and dynamics in changing environments. University of Hawaii at Manoa, Natural Resources and Environmental Management Departmental seminar series, January 2009.

Earthworms, land use, and climate: What can ^{14}C and soil chemistry tell you? Archaeology and Palaeoecology graduate student seminar series, Queen's University Belfast, UK, November 2008.

Introduction to Fieldwork in Svalbard: Going with the Flow. Presented to undergraduates in a Research and Statistics course at Allegheny College, Meadeville, PA, September 2007.

Contrasting roles of above- and belowground litter inputs to forest C stabilization. Lawrence Livermore National Laboratory, Center for Accelerator Mass Spectrometry, Livermore, CA, June 2006.

Density fractionation: biologically meaningful separation of soil organic matter? Isotopics Seminar Series, Environmental Protection Agency, Corvallis, OR. February 2006.

SOM formation: C cycling, biogeochemistry and the DIRT Project. Lawrence Livermore National Laboratory, Center for Accelerator Mass Spectrometry, Livermore, CA, March 2003.

CONFERENCES (LAST FIVE YEARS, *GRADUATE STUDENT, **UNDERGRADUATE STUDENT)

Crow, S. E., M. N. Meki, J. Kiniry, R. Ogoshi, A. Youkhana, M. Pawlowski*, M. Nakahata. Projecting global warming potential of productions systems for tropical perennial C4 grasses cultivated for biofuel feedstock in Hawaii. ASA, CSSA, and SSSA International Annual Meetings, Minneapolis, MN, November 2015. (contributed poster)

Crow, S. E., et al. Soil organic matter stabilization/destabilization in DIRT. ASA, CSSA, and SSSA International Annual Meetings, Minneapolis, MN, November 2015. (invited talk)

Meulemans, J.*, **S. E. Crow**, L. Deem*, J. Yanagida, J. Deenik. Effects of biochar amendment on GHG emission from tropical agricultural soils in two crop managements in Hawaii.

ASA, CSSA, and SSSA International Annual Meetings, Minneapolis, MN, November 2015. (contributed poster)

Youkhana, A., **S. E. Crow**, R. Ogoshi, J. R. Kiniry, M. N. Meki, D. Richardson*, M. Nakahata. Allometric models for predicting aboveground biomass, carbon and nitrogen stocks in potential biofuel crops in Hawaii. ASA, CSSA, and SSSA International Annual Meetings, Minneapolis, MN, November 2015. (contributed poster)

Richardson, D*. **S. E. Crow**, A. Youkhana, J. Moore-Kucera, R. Ogoshi, M. N. Meki, J. R. Kiniry, M. Nakahata. Root biomass and microbial response to deficit irrigation treatments in the rhizosphere of biofuel feedstock cultivation in Hawaii. ASA, CSSA, and SSSA International Annual Meetings, Minneapolis, MN, November 2015. (contributed poster)

Deem, L. M., **S. E. Crow**, J. Deenik, R. Penton, J. Yu. The evaluation of biochar effects at both the field and laboratory scale: soil carbon, microbial community composition, and carbon dioxide efflux. 5th International Symposium on Soil Organic Matter, Göttingen, Germany, September, 2015. (contributed poster)

Crow, S. E., L. M. Deem*, Y. Sumiyoshi*, J. Wells*, N. Hunter**, H. Yamazaki*. Belowground carbon dynamics under zero tillage management of tropical, perennial C4 grasses cultivated for biofuel production. 5th International Symposium on Soil Organic Matter, Göttingen, Germany, September, 2015. (contributed poster)

Lazaro, M. K*., **S. E. Crow**, C. A. Stiles, C. M. Litton, C. P. Giardina, and P. Selmants, M. Reeves, S. Turn, S. Taniguchi, O. S. Schubert, T. Miura, and N. Koch. Comparison of soil carbon mapping techniques across the Hawaiian Islands. National Cooperative Soil Survey Conference, Duluth, MN, June 2015. (contributed poster)

Wells, J.*, **S. E. Crow**, A. Hashimoto, R. Ogoshi, J. R. Kiniry. Transforming conventional sugarcane into sustainable biofuel feedstock production: Optimizing C4 grass feedstock selection through lignin analysis and conversion efficiency study. American Society of Agricultural and Biological Engineers 2015, 1st Climate Change Symposium, Chicago, IL, May 2015.

Hedgepath, A.*, D. W. Beilman, and **S. E. Crow**. Sensitivity of Arctic permafrost carbon in the Mackenzie River Basin: a substrate addition and incubation experiment. American Geophysical Union Annual Meeting, San Francisco, CA, December 2014. (contributed poster)

Deem, L. M.*, E. Mizokuchi**, **S. E. Crow**, and J. Deenik. The application of biochar to soils can reduce labile carbon losses and decrease apparent temperature sensitivity. ASA, CSSA, and SSSA International Annual Meetings, Long Beach, CA, November 2014. (contributed poster)

Lazaro, M. K*., **S. E. Crow**, C. A. Stiles, C. M. Litton, C. P. Giardina, and P. Selmants. Constructing an optimized baseline soil carbon map for the Hawaiian Islands. ASA, CSSA, and SSSA International Annual Meetings, Long Beach, CA, November 2014. (contributed poster)

Youkhana, A., **S. E. Crow,** J. Kiniry, M. N. Meki, R. Ogoshi, and M. Nakahata. Above and belowground biomass and C dynamics under ratoon harvest practices for biofuel feedstock production in Hawaii. ASA, CSSA, and SSSA International Annual Meetings, Long Beach, CA, November 2014. (contributed poster)

Lazaro, M. K*., **S. E. Crow**, C. A. Stiles, C. M. Litton, C. P. Giardina, and P. Selmants. Optimization of baseline soil carbon prediction map for USGA Carbon Assessment of Hawaii. 22nd Annual Hawaii Conservation Conference, Honolulu, HI, July 2014.

Hashimoto, A., R. Ogoshi, D. Takara, S. Khanal, and **S. E. Crow**. High-yield tropical biomass feedstocks for bioenergy production. 22nd European Biomass Conference and Exhibition, Hamburg Germany, June 2014. (contributed poster)

Young, L. C., E. A. VanderWerf, **S. E. Crow**, E. Opie**, H. Yamazaki*, C. Miller, and L. Brown. Recovery of Wedge-tailed Shearwaters and changes in soil nutrients following construction of a predator-proof fence at Kaena Point, Hawaii. Pacific Seabird Group 41st Annual Meeting, Juneau, Alaska, February 2014. (contributed talk)

Crow, S. E., M. Lazaro**, M. Reeves*, C. M. Litton, C. P. Giardina, J. Wells. Extraordinary soils give insight into the role of non-crystalline minerals in soil carbon response to climate and land use changes. American Geophysical Union Annual Meeting, San Francisco, CA, December 2013. (invited talk)

Deem*, L. **S. E. Crow**, J. Deenik, C. R. Penton, J. Yanagida. Biochar soil amendment for waste-stream diversion, nutrient holding capacity, and carbon sequestration in two contrasting soils. American Geophysical Union Annual Meeting, San Francisco, CA, December 2013 (contributed poster)

Lazaro**, M., **S. E. Crow**, C. M. Litton, C. P. Giardina. Magnitude and temperature sensitivity of tephra-derived soil carbon pools across a mean annual temperature gradient in a tropical montane wet forest. American Geophysical Union Annual Meeting, San Francisco, CA, December 2013 (contributed poster)

Meki, M. N., J. R. Kiniry, A. Youkhana, M. Nakahata, R. Ogoshi, and **S. E. Crow**. Key crop parameters for ALMANAC modeling of high biomass energy sorghum growth and productivity. ASA, CSSA, and SSSA International Annual Meetings, Tampa, FL, November 2013. (contributed poster)

Youkhana, A., **S. E. Crow**, M. N. Meki, J. R. Kiniry, R. Ogoshi, and M. Nakahata. Belowground biomass and C dynamics in sugarcane and ratooning energycane cultivated as biofuel production in Hawaii. ASA, CSSA, and SSSA International Annual Meetings, Tampa, FL, November 2013. (contributed poster)

Lazaro**, M., **S. E. Crow**, C. Litton, C. Giardina, and J. Wells. Identifying mechanisms of carbon sequestration in volcanic ash-derived soils of Hawaii across a 5.2 ^{o}C mean annual temperature gradient. 21st Annual Hawaii Conservation Conference, Honolulu, HI, July 2013.

Giardina, C. E. Boxler, S. Cordell, **S. E. Crow**, L. Fortini, M. Fox, J.B. Friday, T. Giambelluca, T. Hawbaker, F. Hughes, J. Jacobi, C. Litton, R. MacKenzie, R. Ostertag, B. Reed, C. Stiles, R. Striegl, and Z. Zhu. Assessing carbon storage and fluxes in Hawaii: Impacts of fire, invasive species, and climate change on the global warming potential. 21st Annual Hawaii Conservation Conference, Honolulu, HI, July 2013. (contributed poster)

Crow, S. E., B.B. Tamang, T. Radovich, P. Poudyal, B. Paudel, J. Halbrendt, and K. Thapa. Maintenance of soil quality and sustainable production through implementation of conservation agriculture production system (CAPS) in rainfed, sloping land farming of the mid-hill region of Nepal. The International Conference "Frontiers in Conservation Agriculture in South Asia and Beyond (F-CASA), Kathmandu, Nepal, March 2013.

Paudel, B.*, T. Radovich, **S. E. Crow**, J. Halbrendt*, C. Chan-Halbrendt, B. B. Tamang, and K. Thapa. Using competition ratios and total revenue parameters to assess millet and legume intercropping under conservation agriculture production systems in Nepal. The International Conference "Frontiers in Conservation Agriculture in South Asia and Beyond (F-CASA), Kathmandu, Nepal, March 2013.

Paudel, B.*, T. Radovich, **S. E. Crow**, J. Halbrendt*, C. Chan-Halbrendt, B. B. Tamang, B. Reed*, and K. Thapa. On-farm performance evaluation of conservation agriculture practice system (CAPS) in central mid-hills of Nepal. The 3rd International Conference on Conservation Agriculture in Southeast Asia: Conservation Agriculture and Sustainable Upland Livelihoods, Cambodia, December 2012.

Reeves, M. I.*, **S. E. Crow**, R. Yost, S. Turn. Carbon stocks and soil carbon dynamics: an investigation of C sequestration potential in a *Eucalyptus grandis* plantation in Hawaii. American Geophysical Union Annual Meeting, San Francisco, CA, December 2012.

Cramer, J. **, **S. E. Crow**, and J. L. Deenik. Improved grass selections and their impact on soil carbon partitioning in pastoral systems of the Northern Marianas Islands. ASA, CSSA, and SSSA International Annual Meetings, Cincinnati, OH, October 2012.

Sumiyoshi, Y. *, **S. E. Crow**, C. M. Litton, J. L. Deenik, B. Turano, and A. Taylor. Belowground carbon cycle of Napier and Guinea grasses grown for biofuel feedstock production. ASA, CSSA, and SSSA International Annual Meetings, Cincinnati, OH, October 2012.

Pawlowski, M.*, **S. E. Crow**, J. L. Deenik, C. Evensen. Linking soil and water conservation practices to greenhouse gas flux and fine root dynamics: A comparison of sugarcane and Napier grass grown for bioenergy production. ASA, CSSA, and SSSA International Annual Meetings, Cincinnati, OH, October 2012.

Meki, M. N, J. Kiniry, A. Youkhana, M. H. Nakahata, **S. E. Crow**, R. Ogoshi, J. Steiner. Parameterization of the ALMANAC model to evaluate novel high biomass crops on Maui, Hawaii. ASA, CSSA, and SSSA International Annual Meetings, Cincinnati, OH, October 2012.

Crow, S. E. Mineral-associated organic matter: Stable but still sensitive. 5th International Workshop on Soil and Sedimentary Organic Matter Stabilization and Destabilization, Ascona, Switzerland, October 2012. (Invited "Emerging Scientist" Oral Presentation)

Crow, S. E. Fractionating soils so that others do not have to: radiocarbon informs choice of method for scale, ecosystem, or process. American Geophysical Union Annual Meeting, San Francisco, CA, December 2011. (Contributed abstract)

Pawlowski, M.*, **S. E. Crow**, Y. Sumiyoshi*, J. Wells, and H. Kikkawa**. Greenhouse gas flux under warm-season perennial C_4 grasses across different soil and climate gradients on the Islands of Hawaii. American Geophysical Union Annual Meeting, San Francisco, CA, December 2011. (Contributed abstract)

Sumiyoshi, Y.*, **S. E. Crow**, C. M. Litton, and J. L. Deenik. Belowground carbon cycle of Napier and Guinea grasses. American Geophysical Union Annual Meeting, San Francisco, CA, December 2011. (Contributed abstract)

Litton, C. M., C. P. Giardina, and **S. E. Crow**. Soil carbon pool size does not vary with temperature along a 5°C mean annual temperature gradient in Hawaiian montane tropical wet forests. Ecological Society of America Annual Meeting, Austin, TX, August 2011

TEACHING EXPERIENCE

INSTRUCTION

2014 **Instructor**, "Advanced Topics in NREM: Quantitative Ecosystem Carbon" (NREM691). Developed and instructed graduate-level elective course in concepts and analytical methods for understanding and assessing terrestrial ecosystem

carbon across broad time scales and geographic regions, University of Hawaii Manoa.

2013-present **Instructor**, "Predicting and Controlling Degradation in Human-Dominated Terrestrial Ecosystems" (NREM 612). Graduate-level core course, continued development and delivery of lecture and current literature discussion-based course, University of Hawaii Manoa.

2013-2014 **Co-Instructor**, "Natural Resource Management" (NREM 301 + Lab), continued development, coordination, and delivery of undergraduate-level classroom lectures and laboratory activities, worked with teaching assistant, University of Hawaii Manoa.

2010-present **Guest Lecturer**, "Ecosystem Ecology" (NREM 680), lecture series on litter decay and soil carbon storage, University of Hawaii at Manoa.

2009-present **Co-instructor**, "Fundamentals of Soil Science" (TPSS/NREM 304+Lab), further development, coordination, and delivery of undergraduate-level classroom lectures and laboratory activities, worked with teaching assistant, University of Hawaii at Manoa.

2009-2012 **Guest Lecturer**, "Natural Resource Management" (NREM301 Lab), guest co-instructor for introductory soil science laboratory session, University of Hawaii Manoa.

2006 **Guest Lecturer**, "Introduction to Soil Science", lecture to ~80 undergraduate and graduate students Oregon State University

2004 **Graduate Teaching Assistant**, "Introduction to Soil Science Laboratory", and "General Biology Laboratory: Genetics and Ecology", Oregon State University.

2004 **Guest Lecturer**, "Honors Ecology", lecture and lab session to undergraduates, Oregon State University

1999-2000 **Graduate Teaching Assistant**, "General Biology Laboratory" and "Science and Environmental Issues", Villanova University.

1999 **Undergraduate Teaching Assistant**, "Botany Laboratory", College of William and Mary

POSTDOCTORAL AND STUDENT TRAINING (ALL UNIVERSITY OF HAWAII AT MANOA)

Postdoctoral

2011-present **Advisor,** Dr. Adel Youkhana, Postdoctoral Researcher, "Water and carbon footprint and plant parameters of biofuel production on the HC&S sugarcane lands on Maui, Hawaii".

Graduate

2014, Fall **Advisor, Graduate Committee Chair**, Jabez Meulemans, NREM M.S. Plan A, Thesis option, "Systems approach to assessing the environmental and economic sustainability of food and fuel crops with biochar soil amendment", degree expected May 2016.

2014, Fall **Advisor, Graduate Committee Chair**, Jon Wells, NREM M.S. Plan A, Thesis option, "Development of a new index to predict conversion efficiency of renewable fuel feedstocks", degree expected May 2016.

2013, Spring **Graduate Committee Member**, Jade Delevaux, NREM, Ph.D. "Linking land-sea ecosystem services", degree expected December 2016.

2013, Spring **Advisor, Graduate Committee Chair**, Lauren Deem, NREM Ph.D. "Mechanistic understanding of improvements in yield and sustainability of biochar-amended soil", degree expected December 2016.

2013, Fall **Graduate Committee Member**, Alexandra Hedgpeth, Geography M.A. "Sensitivity of Arctic permafrost carbon in the Mackenzie River Basin: an incubation experiment to observe the priming effect", degree expected August 2015.

2013-2015 **Advisor, Graduate Committee Member**, Michelle Lazaro, NREM M.S., Plan B. Recipient of the 2013 Hauʻoli Mau Loa Foundation Graduate Fellowship in NREM, Capstone Project Title "Optimization of baseline soil carbon stock assessment across the Hawaiian Islands", degree awarded May 2015.

2013-2014 **Advisor, Graduate Committee Chair**, Whitney Ray, NREM M.S. Plan A, Thesis option, "Greenhouse gas emission balance of biofuel feedstock for potential carbon trading", degree awarded December 2014.

2012-2015 **Graduate Committee Member**, Bikash Paudel, NREM, Ph.D., "Evaluating conservation agriculture production systems for smallholder subsistence farmers in the hill region of Nepal", degree awarded May 2015.

2012-2014 **Graduate Committee Member**, Benjamin Czeck, Geology and Geophysics Department M.S., Thesis "Our food in a changing climate: growth, yield, and nutrient changes of sweet potato across the spectrum of CO_2 concentrations projected in the next 150 years", degree awarded May 2014.

2012-2013 **Advisor**, **Graduate Committee Member** Hironao Yamazaki, NREM, M.S. Plan B, Capstone Project Title "Alteration in soil carbon pools following land use and management change for bioenergy feedstock production", degree awarded December 2013.

2012-2013 **Graduate Committee Member,** James Harmon, Tropical Plant and Soil Sciences Department, M.S. Plan B,, capstone Project Title "Composting to improve sustainable food production systems and water quality in Pohnpei, Federated States of Micronesia", degree awarded May 2013.

2011-2013 **Advisor, Graduate Committee Chair,** Meghan Pawlowski, NREM, M.S. Plan A, Thesis option, "Greenhouse gas flux and fine root dynamics of sugarcane and Napier grass under deficit irrigation", degree awarded May 2013.

2011-2013 **Graduate Committee Member,** Alisa Davis, NREM, M.S. Plan A, Thesis Option, "*Toxoplasma gondii* detection in the environment from naturally infected cats in Hawaii", degree awarded May 2013.

2010-2012 **Advisor, Graduate Committee Chair**, Mataia Reeves, M.S. Plan A, Thesis option, "The potential carbon sequestration of *Eucalyptus grandis* in conjunction with its use as a biofuel feedstock", degree awarded December 2012.

2010-2012 **Advisor, Graduate Committee Chair,** Yudai Sumiyoshi, M.S. Plan A, Thesis option, "Belowground carbon cycle of Napier and Guinea grasses grown for sustainable biofuel feedstock production", degree awarded December 2012. Awarded "Best NREM Master's Student Presentation" at the 2011 CTAHR Student Research Symposium. Awarded "2011 Outstanding Student Paper Award" from the Biogeosciences Section of the American Geophysical Union.

<u>Undergraduate</u>

2015	**Honors Thesis Committee Member**, William Thompson, TPSS Department, "The role of ash in the efficacy of biochar amendment for promoting plant growth".
2014	**Honors Thesis Committee Member**, Josiah M. K. Marquez, TPSS Department, "Biochar increasing internal tolerance to manganese toxicity in a manganese-rich acid soil".
2013	**Internship Advisor,** Daniel Richardson and Nathan Hunter, NREM Department
2013	**Honors Thesis Committee Member**, Karl Hsu, Geography Department, "Study of long-term climate change and plant ecosystem processes in Hawaii using copper oxide chemistry of organic sediments".
2012	**Mentor**, Erika Mizokuchi, Water, Energy, Soil & Sustainability (WESS) Student Intern. Senior Thesis "Cation exchange capacity and carbon quality of biochar amended soils".
2012	**Mentor**, Michelle Lazaro, Center for Microbial Oceanography: Research and Education (C-MORE) Scholars Intern, Undergraduate "Directed Research" student, awarded University of Hawaii at Manoa Undergraduate Research Opportunities Program Fellowship ($5000 research funds). "Best NREM Undergraduate Presentation" at 2013 CTAHR Student Research Symposium.
2012	**Internship Advisor,** Mark Miller, NREM Department
2012	**Internship Advisor**, Mariko Panzella, TPSS Department
2011-2012	**Mentor,** Mariko Panzella, Undergraduate "Directed Research" student, awarded University of Hawaii at Manoa Undergraduate Research Opportunities Program Fellowship ($3000 stipend).
2010	**Internship Advisor,** Heather Kikkawa, NREM Department
2009-2010	**Mentor,** Mataia Reeves, Undergraduate "Directed Research" student, awarded "Best Undergraduate Presentation" at 2010 CTAHR Student Research Symposium.

High School

2014	**Science Fair Project Mentor**, Matthew Dufale, Farrington High School, "Soil amendments in ambient CO_2 concentrations impact the balance of greenhouse gases". 4th Place Overall and Best in Category (Environmental Management) at the Kapioloani District Science Fair; interviewed on Hawaii News Now (Friday, March 28, 2014); Finalist at the Hawaii State Science Fair: Best of Category Environmental Management; Hawaii Conservation Alliance 1st Place ($500); DuPont Pioneer 1st Place ($150); Pepperman Alpert Memorial Gift Certificate winner.
2011	**Science Fair Project Mentor**, Steven Okada, Maui High School, "Phytolith sequestration in *Saccharum officinarum* (sugarcane) and *Pennisetum purpureum* (Napier grass).

SERVICE

DEPARTMENT, COLLEGE, UNIVERSITY

Selected participant in the 2015 Innovation Showcase: highlighting cutting-edge innovations/technologies from the faculty of UH Mānoa's College of Tropical Agriculture and Human Resources and the Tokyo University of Agriculture and

Technology, May 2015.

Faculty Curriculum Committee Member, NREM, Fall 2014-present.

Search Committee Member, Tropical Plant and Soil Sciences Department, "Soil Microbiology", spring-summer 2015.

Search Committee Member, NREM, "Assistant Professor in NREM", winter 2014.

Search Committee Member, NREM, "Tropical Soils and Watershed Hydrology", Spring-Summer 2014.

CTAHR Faculty Senate – elected NREM representative, Spring 2015-present.

CTAHR Strategic Planning Action Team #5 – Land Development Opportunities, Fall 2013-present.

Founding member and faculty advisor for the University of Hawaii Manoa student club Student Alliance for Soils and Sustainability (SASSy) (January 2011-2012)

University of Hawaii Manoa Exhibitor – The World Congress on Zero Emissions Initiatives: Launching the "Blue Economy", September 2010.

Faculty judge, University of Hawaii Manoa - CTAHR Student Symposium, April 2010, April 2014.

PROFESSIONAL

International Referee, Bergen Research Foundation & University of Bergen, Norway. provide international external review of early-career proposal, May 2015

Proposal review panel member, U.S. Department of Energy, Environmental System Science Funding Opportunity Announcement (DE-FOA-0001172), Terrestrial Ecosystem Sciences, Belowground Ecology, Rockville, MD, March 2015.

Technical Team member, USDA NRCS Kealakekua MLRA Soil Survey Office. The MLRA soil survey technical team consists of the soil survey office (SSO) staff, regional (SSRO) staff (i.e., senior regional soil scientist, soil data quality specialist, and regional ecological site specialist, as appropriate), applicable resource soil scientists, applicable NCSS partners, and other applicable discipline specialists from field, area, State, or regional offices. Members of the technical team help the Kealakekua MLRA Soil Survey Office review and concur with proposed projects among other tasks. 2014-present.

Editorial Review Board Member, Biogeochemistry, Springer Journal, 2012-present.

Peer reviewer: Global Change Biology, Rapid Communications in Mass Spectrometry, Biogeochemistry, Geoderma, Organic Geochemistry, Radiocarbon, Soil Science Society of America Journal, Soil Biology and Biochemistry, Forest Science; National Science Foundation-DEB, Ecosystems; EAR Instrumentation & Facilities, Wiley-Blackwell Publishers.

Conference organizing committee, Chief Editor of conference abstracts publication, BIOGEOMON 5th International Symposium on Ecosystem Behavior, University of Santa Cruz, CA, June 2006.

Assistant to the organizing committee, 2nd International Conference on Mechanisms of Organic Matter Stabilization and Destabilization in Soils, Asilomar, CA, 2005.

Conference organizing committee, Co-Editor of conference abstracts publication, BIOGEOMON 4th International Symposium on Ecosystem Behaviour, University of Reading, UK, 2002.

PROFESSIONAL AND NETWORK MEMBERSHIPS

American Geophysical Union, Soil Science Society of America, National Soil Carbon Network