

Bioenergy, Sustainability, and Land-Use Change Report Oak Ridge National Laboratory (ORNL) April 2017

Publications

- Dale VH, KL Kline, ES Parish, AL Cowie, R Emory, RW Malmsheimer, R Slade, CT Smith, TB Wigley, NS Bentsen, G Berndes, P Bernier, M Brandão, H Chum, R Diaz-Chavez, G Egnell, L Gustavsson, J Schweinle, I Stupak, P Trianosky, A Walter, C Whittaker, M Brown, G Chescheir, I Dimitriou, C Donnison, A Goss Eng, KP Hoyt, JC Jenkins, K Johnson, CA Levesque, V Lockhart, MC Negri, JE Nettles, M Wellisch (2017) Status and prospects for renewable energy using wood pellets from the southeastern United States. GCB Bioenergy doi: 10.1111/gcbb.12445.
<http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12445/full>
- Dale VH, Parish ES, Kline KL, Tobin E (2017) How is wood-based pellet production affecting forest conditions in the southeastern United States? Forest Ecology and Management 396: 143-149. doi.org/10.1016/j.foreco.2017.03.022 <https://authors.elsevier.com/a/1UxyW1L~GwCo5V>
- Fritsche Uwe R., Göran Berndes, Annette L. Cowie, Virginia H. Dale, Keith L. Kline, Francis X. Johnson, Hans Langeveld, Navin Sharma, Helen Watson, and Jeremy Woods (2017) “Sustainable energy options and implications for land use” for the United Nations Convention to Combat Desertification (UNCCD) & the International Renewable Energy Agency (IRENA). IRENA has reviewed the Working Paper and thinks it meets their expectations.
- Parish ES, Dale VH, Abt RC, Kline KL. (submitted). A Southeastern US perspective on assumptions and counterfactual scenarios needed to evaluate the sustainability of wood pellet exports to Europe. Wiley Interdisciplinary Reviews (WIREs) as an invited FOCUS article.

Presentations

Apr. 9-13: Several ORNL scientists presented at the US Regional Association of the International Association for Landscape Ecology meeting in Baltimore, Maryland: <http://usiale.org/baltimore2017/>.

- Esther Parish presented her research on wood pellet sustainability as part of a symposium entitled “Telecoupling people and landscapes among distant places around the world.”
- Keith Kline gave a presentation on “Can sustainability standards and certification improve landscape outcomes?”
- Virginia Dale gave a presentation on “Bridging ecosystem services and sustainable bioenergy indicators with stakeholders.”



Apr. 10: Virginia Dale gave a presentation on “Bridging Ecosystem Services and Sustainable Bioenergy Indicators with Stakeholders” at the 2017 International BIOMASS Conference & Expo in Minneapolis, Minnesota, as part of the pre-conference on “Emerging Biomass Feedstocks.” The meeting also provided an opportunity to discuss bioenergy activities occurring in Iowa with Emily Heaton (from Iowa State University).



Apr. 25: Keith Kline presented at the IEA Bioenergy Roadmap Workshop in France. “The aim of this workshop is to review the criteria which “sustainable biomass” needs to meet – not only for bioenergy but also for other components of the bioeconomy.” DOE Sponsors asked that Keith give priority to this meeting because of the potential impacts it could have on US jobs and economic growth. Workshop outcomes could impact ability of US exports to have access to global markets. Participation in the workshop and invited presentation on “US Biomass Resources and Sustainability” support the

achievement of ORNL FY17 milestones for improving regulations and standards applied to bio-based products.

Other ORNL Activities

Apr. 8: Virginia Dale participated in a panel discussion on non-academic careers for graduate students primarily in the Department of Ecology and Evolutionary Biology from the University of Tennessee, Knoxville. The goal of this event was to expose graduate students from a range of STEM fields to career opportunities available to them outside the traditional academic track. The panel was diverse, with speakers representing careers in federal agencies, NGOs, National Labs, environmental consulting agencies, science policy/communication, industry, and zoos/arboreta. She shared that the US Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) has developed a bioenergy career map, which the students found quite useful. It can be found at <https://energy.gov/eere/bioenergy/bioenergy-career-exploration-wheel>

Apr. Virginia Dale contributed to the formal peer review of the Northwest Forest Plan Science Synthesis that was organized by the Ecological Society of America (ESA). The review package was submitted to the Forest Service on Friday, April 7. The importance of this effort was recognized by Dr. Tom Spies who noted that "The quality of the peer review process and the peer review report will help insure that the federal forest managers will have scientific publication that will be considered the best available science."

Apr. 18: Tim Theiss, Natalie Griffiths, and Virginia Dale participated in the USDA/DOE Bioeconomy Research Collaboration Meeting in Beltsville, Maryland.

Apr. 19: Latha Baskaran completed her dissertation and will receive her PhD at the graduation ceremony at the University of Tennessee on May 11. Her dissertation is titled "Effects of Switchgrass Related Land-Use Changes on Aquatic Macroinvertebrates." She has one paper based on this work in review and will soon submit two other manuscripts.

Apr. 27: Virginia Dale and Esther Parish joined an Oak Ridge/Knoxville area networking dinner with the DOE Young Professionals Group visiting from Washington DC. This group included early and mid-career professionals in the energy arena focusing on clean energy, composite materials, energy efficiency, energy policy, engineering, environmental science, fuel cells, law, nuclear security, renewable energy, sustainability, and weatherization.

Upcoming ORNL Visits/Events

May 2: Virginia Dale will be the kick-off speaker at FUSION (Faculty Understanding Science In Open Networks): Wildland Fire Research Team Building and Exploration Event at the University of Tennessee focused on advancing research associated with wildland-urban wildfires that will focus on the Gatlinburg fire last November but also the general increase of wildfires regionally: tiny.utk.edu/fusion1

May 5: Esther Parish will attend the next Tennessee STEAM Festival planning event to find out how ORNL can join forces as part of the Fifth Annual National Bioenergy Day on October 18.

May 10: A virtual symposium will be led by ORNL and DOE/BETO on the Billion Ton report: Volume 2, Environmental Effects of Select Scenarios from Volume 1. **Rebecca Efroymsen** is the lead ORNL staff on this activity, and several other ORNL scientists are involved.

May 18-20: Keith Kline and Virginia Dale will participate in a workshop organized by the IEA Bioenergy Intertask on Sustainability. They will speak on:

- Virginia Dale: "Relating ecosystem services to indicators of progress toward a sustainable bioeconomy."
- Keith Kline: "Bridging ecosystem services and sustainable bioenergy indicators with stakeholders."

- Virginia Dale: "Linking measurement and governance: wood pellets from the southeastern United States."

Jul. 12: Rebecca Efroymsen will speak on the Billion Ton report, volume 2, at Bioeconomy 2017.

Aug. 6-11: Several ORNL scientist will participate in the upcoming annual meeting of the Ecological Society of America meeting in Portland.

- Virginia Dale organized a special session on Large Infrequent Disturbances for the Ecological Society of America meeting in Portland. Speakers are Monica Turner, Jerry Franklin, Ariel Lugo, and Ólafur Arnalds.
- Gangsheng Wang will present "Simulated Response of Avian Biodiversity to Biomass Production in the Conterminous United States" with coauthors Henriette Jager, Jasmine Kreig, Nathan Sutton, and Ingrid Busch.
- Keith Kline will present "Estimating land-use change effects associated with supplying a billion-ton U.S. bioeconomy."
- Virginia Dale will present "Status and prospects for renewable energy using wood pellets from the southeastern United States."
- Virginia Dale will help lead a field trip to Mount St. Helens on August 5.

Sept. 12-15: Virginia Dale was invited to give a presentation at the International Association for Landscape Ecology (IALE) 2017 European Congress in Ghent, Belgium, in a symposium on "Integrating renewable and non-renewable energy development with landscape service trade-offs." She will speak on "Assessing Progress toward Sustainability of Bioenergy Systems."

Sept. 18: Virginia Dale was invited by Felix Kienast to speak at the Landscape Ecology Group at the Swiss Federal Institute for Forest, Snow and Landscape Research.

Sept. 23-27: Yetta Jager was invited to participate in a symposium highlighting authors in an upcoming Renewable Energy and Wildlife book to be published by Johns Hopkins Press in conjunction with The Wildlife Society. The Symposium is sponsored by the Renewable Energy Working Group of The Wildlife Society and will be held at the annual meeting in Albuquerque, NM.

Oct. 18: ORNL will participate in the Fifth Annual National Bioenergy Day (led by Esther Parish).

Nov. 15-17: Latha Baskaran and Virginia Dale had their abstract accepted for presentation at the annual Society of American Foresters National Convention in Albuquerque, NM. The presentation is on "Framework to Identify Effects of Forest Management for Wood-based Pellets on Biodiversity."

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