

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

Publications

- Dale VH and KL Kline. 2017. Interactive Posters: A valuable means for enhancing communication and learning about productive paths toward sustainable bioenergy. *Biofuels, Bioprod. Bioref.* <http://onlinelibrary.wiley.com/doi/10.1002/bbb.1753/epdf>
- Souza G, Ballester MVR, Cruz CHB, Chum H, Dale B, Dale VH, Fernandes E, Foust T, Karp A, Lynd L, Maciel R, Milanez A, Nigro F, Osseweijer P, Verdade L, Victoria R, Van Der Wielen L (In press) The role of bioenergy in a climate-changing world. *Environmental Development Journal*.

Presentations

Feb. 7-8: Esther Parish participated in the Mission Advisory Board and Science Advisory Board kick-off meeting for the Environmental Metrics for Hydropower (EMH) Project hosted by ORNL in Washington, D.C. Over the past year, Esther has been working with the ORNL EMH project team to apply lessons learned from DOE bioenergy sustainability indicator development to the DOE hydropower space and was asked to summarize this ORNL bioenergy sustainability research at the meeting. DOE-HQ attendees included Alejandro Moreno, Hoyt Battey, Tim Welch, and Dana McCoskey. Twenty-two industry and agency representatives and ten scientific experts from across the US participated in the discussion and breakout groups.

Other ORNL Activities

KL Kline and VH Dale are authors of research published in *Global Change Biology Bioenergy* (impact factor 6.15) that was the journal's top downloaded article in 2016, even though the paper was only available during the final half of the year. The paper, "Reconciling food security and bioenergy: priorities for action," shows how biofuels can significantly enhance food security and provides examples of past synergies. The publication, led by Kline, is the product of several years of collaborations with over 30 scientists from around the world, was supported by the Department of Energy's Bioenergy Technologies Office (BETO) and addresses key barriers identified in BETO's Multi-Year Program Plan. Also of note: the paper was featured in over 60 media outlets in 19 nations across four continents within the first 2 weeks of its release in June 2016.

Feb. 7-8: Esther Parish participated in the Mission Advisory Board and Science Advisory Board kick-off meeting for the Environmental Metrics for Hydropower (EMH) Project hosted by ORNL in the Washington, D.C. metro area. Over the past year, Esther has been working with the ORNL EMH project team to apply lessons learned from DOE bioenergy sustainability indicator development to the DOE hydropower space and was asked to summarize this ORNL bioenergy sustainability research at the meeting. DOE-HQ attendees included Alejandro Moreno, Hoyt Battey, Tim Welch, and Dana McCoskey. Twenty-two industry and agency representatives and ten scientific experts from across the US participated in the discussion and breakout groups.

Feb. 15: Virginia Dale, Keith Kline and Esther Parish prepared a summary of their work supported by BETO on "Assessing progress toward sustainability" that Esther shared with Dana McCrosky and Hoyt Battey of the DOE Energy Efficiency and renewable Energy (EERE) Water Power Technologies Office, for that Office is interested in building off of the work that ORNL has done for EERE's Bioenergy Technologies Office (BETO).

Feb. 21: Keith Kline and Virginia Dale joined a conference call of the IEA Bioenergy Intertask Sustainability project to discuss objective 3: understanding and engaging with bioenergy stakeholder groups.

Feb. 25: Esther Parish supervised the Hydrogeology Challenge event for the Regional Science Olympiad competition held at Pellissippi State Community College that involved developing and administering a 50-minute test about groundwater contamination & remediation for 10 high school teams.

Upcoming ORNL Visits/Events

Mar. 6-9: Many ORNL CBES team members will participate in DOE Bioenergy Technologies Office External Peer Review, in Denver, CO.

Mar. 10: Esther Parish will present career path/job requirements to Roane County High School students through a Freshmen Career Event sponsored by the Rotary/Interact Club.

Mar. 13: Virginia Dale will speak on “Incorporating Bioenergy into Sustainable Landscape Design” at The Great Experiment Conference in Knoxville, Tennessee. The conference focuses on work conducted in developing the science for a Tennessee Biofuels Industry.

Mar. 20-24: Virtual symposium on the Billion Ton report, volume 2, led by ORNL and DOE/BETO. Environmental Effects of select scenarios from volume 1. Fourteen videos will be introduced through a webcast with live Q&A during this week. Stakeholders can register for the symposium through the Knowledge Discovery Framework, beginning the week of March 13.

Mar. 28: ORNL will host a workshop on Visualizing Progress toward Bioenergy Sustainability. Mike Hilliard, Esther Parish, Keith Kline and Virginia Dale are developing a tool to support visualization of complex information. The workshop will be a chance for interested stakeholders to give input into development of the tool and provide offer a first glimpse into the workings of the tool.

Apr. 8: Virginia Dale will participate 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 is to expose graduate students from a range of STEM fields to career opportunities available to them outside the traditional academic track. The panel will be diverse, with speakers representing careers in federal agencies, NGOs, National Labs, environmental consulting agencies, science policy/communication, industry, and zoos/arboreta.

Apr. 9-13: Esther Parish has been invited to present her research on wood pellet sustainability at the (US Regional Association of the International Association for Landscape Ecology meeting in Baltimore, Maryland: <http://usiale.org/baltimore2017/>. Her presentation will be part of a symposium entitled “Telecoupling people and landscapes among distant places around the world.”

Other ORNL presentations at the upcoming US IALE meeting are listed below.

- Keith Kline will speak on “Can sustainability standards and certification improve landscape outcomes?”
- Virginia will speak on “Bridging ecosystem services and sustainable bioenergy indicators with stakeholders.”



Apr. 10: Virginia Dale will speak 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.”

Apr. 18: Tim Theiss, Amit Naskar, Laurence Eaton, Natalie Griffiths, and Virginia Dale will participate in the USDA/DOE Bioeconomy Research Collaboration Meeting in Beltsville, Maryland.

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

- “Sustainable production of wood based bioenergy in the Southeastern US.”
- “Assessing progress toward sustainability of cellulosic-based bioenergy in the US.”

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, 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.

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