

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

Publications

- Baskaran L. 2017. Effects of switchgrass related land-use changes on aquatic macroinvertebrates. PhD Dissertation. University of Tennessee, Department of Geography, Knoxville, TN.
- Efroymson RA, VH Dale, MH Langholtz. 2017. Socioeconomic indicators for sustainable design and commercial development of algal biofuel systems. GCB Bioenergy 9:1005-1023, doi: 10.1111/gcbb.12359
- Parish ES, Dale VH, Tobin E, Kline KL (In press) Dataset of timberland variables used to assess forest conditions in two Southeastern United States' fuelsheds. Forest Ecology and Management.
- Mandal S, Shurin J, Efroymson R, Mathews T. 2017. Heterogeneity in nitrogen sources enhances productivity and nutrient use efficiency in algal polycultures. Environmental Science and Technology.
- Singh NA, Kline KL, Efroymson RA, Bhaduri B, O'Banion B (Submitted) Uncertainty in estimates of bioenergy-induced land-use change: The impact of inconsistent land-cover datasets and land class definitions. Chapter in "Bioenergy and land use change" book to be published by American Geophysical Union.
- Stupak I, Mai-Moulin T, Junginger M (editors) 2017. Sustainability of bioenergy supply chains. Book of abstracts from an inter-Task workshop 18-19 May 2017, Gothenburg, Sweden; Inter-Task project "Measuring, governing and gaining support for sustainable bioenergy supply chains." <http://www.trippus.se/eventus/userfiles/82471.pdf>
- Szyjka S., Mandal S., Schoepp NG, Tyler BM, Yohn CB, Poon YS, Villareal S, Burkart MD, Shurin JB, Mayfield SP. 2017. Evaluation of phenotype stability and ecological risk of genetically modified algae in open pond production. Algal Research.

Presentations

May 2: Virginia Dale was 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 18-20: Keith Kline and Virginia Dale participated in a workshop organized by the IEA Bioenergy Intertask on Sustainability. They spoke 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."





Keith served as plenary session rapporteur on the final day of the workshop. The program announcement and agenda are at <http://www.trippus.se/eventus/userfiles/82472.pdf>

Other ORNL Activities

May: Jasmine Kreig has joined the Bredesen Center and will be working with Yetta Jager on spatial design of Iowa fuelsheds to produce biomass and recover ring-necked pheasant on CP38 lands.

May 11: Latha Baskaran received her PhD in Geography from the University of Tennessee.

May 15-19: Maggie Davis participated in the annual meeting at the University of Oregon and nearby field sites. This was the capstone meeting for a 5-year, NSF-funded project led by Michigan Tech University to examine sustainability of forest-bioenergy projects across the Americas.

May 17: Esther Parish joined a discussion with well-renowned climate scientist Katharine Hayhoe of Texas Tech (who visited the Lab from May 16-17) and other ORNL researchers studying the impacts of climate change on infrastructure and the environment. Esther Parish also participated in Dr. Hayhoe's mini-lecture on downscaling and creating projections that are useful for local impacts study. Dr. Hayhoe is well-known for her excellent science communication skills and public engagement in addition to her quality research.

May 30: Virginia Dale, Keith Kline and Sarah Eichler Inwood submitted two reports to the International Maize and Wheat Improvement Center (CIMMYT) for the project that aims to assess progress toward more sustainable agricultural landscapes. One report summarizes results of a field trip to Obregon, Mexico, and the other reports on recommended indicators for the Mexico Case Study in the State of Sonora.

Upcoming ORNL Visits/Events

Jun. 6: As corresponding author of the IEA bioenergy report '*Status and prospects for renewable energy using wood pellets from the southeastern United States*,' Virginia Dale will present this paper to the bioenergy working group of the European Commission as requested by Giulio Volpi, European Commission Directorate General for Energy, Unit C1: Renewable Energy and Carbon Capture and Storage (CCS) Policy.

Jun. 6-8: Keith Kline will represent ORNL teams at the Bioenergy Technologies Office workshop titled "Biofuels and Bioproducts from Wet and Gaseous Waste Streams: Market Barriers and Opportunities" in Berkeley, CA.

Jun. 9: Virginia Dale will speak in the ORNL postdoc research seminar on "From disturbance to sustainability: following interesting questions and fun opportunities."

Jun. 14-16: Maggie Davis and Tim Theiss are assisting ORAU with the development of a summer workshop for local teachers entitled "Bioenergy Workforce Development for Educators." This June 14-16 workshop will provide instruction and content for teaching about bioenergy in High School and Middle School classrooms. Participants will hear presentations from Oak Ridge National Laboratory researchers

Esther Parish, Terry Matthews, Brian Davison, and others on topics such as alternative energies, sustainable bioenergy, mitigating harmful emissions, and computational and visualization resources. The teachers will also take tours of the ORNL Manufacturing Demonstration Facility, the UT Arboretum, and the ORNL Bioenergy and Water Ecology labs.

Jul. 12: Several ORNL scientists will participate in Bioeconomy 2017: Domestic Resources for a Vibrant Future.

- Rebecca Efrogmson will speak on the Billion Ton report
- Keith Kline and Virginia Dale will speak in the plenary session IV, entitled Catalyzing a Global Advanced Bioeconomy.

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.
- Virginia Dale and Keith Kline will participate in a side meeting organized by Brian Kittler of the Pinchot Institute on opportunities and constraints of wood based bioenergy.

Sept. 12-15: Virginia Dale is 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 is 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 is 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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