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**EDUCATION:** Cornell University, Ph.D., Environmental Toxicology, minors in Ecology & Public Policy, 1993  
Cornell University, M. S., Environmental Toxicology, 1990  
La Salle University, B. A., Biology/English, 1987

**POSITIONS:** Environmental Sciences Division, Oak Ridge National Laboratory (ORNL), Oak Ridge Tennessee (1994-present, currently Distinguished R&D Staff Affiliate, University of Tennessee Baker School of Public Policy & Public Affairs, Center for Energy, Transportation & Environmental Policy (2023) Editor-in-Chief of *Environmental Management* (2013-2014) Co-Editor-in-Chief of *Environmental Management* (2010-2013, 2015) American Association for the Advancement of Science (AAAS) Science, Engineering and Diplomacy Fellow at U.S. Agency for International Development (1993-1994)

**EXPERTISE** Sustainability analysis, energy and environmental justice, environmental effects of energy technologies, social acceptability of energy, environmental toxicology, causal analysis, policy analysis, ecosystem services and valuation, environmental and socioeconomic indicators and targets, ecological risk assessment

## CURRENT PROJECTS

- PI of “Energy Equity in the Transition to Renewables: The Bioenergy Case,” DOE Bioenergy Technologies Office (2021-present), focusing on development of distributive and procedural justice indicators with stakeholder advisory committee, community engagement best practices, understanding stakeholder concerns about bioenergy, social acceptability of siting bioenergy facilities including repurposing oil refineries and adding CO<sub>2</sub> pipelines for carbon capture and storage, planning regional listening sessions.
- Lead for stakeholder engagement in the ORNL Climate Change Science Institute, Science and Technology for Applied Regional Solutions program (STARS, climate modeling and decarbonization projects) a collaboration with Georgia Tech and Vanderbilt
- Just Transitions consultant to multiagency Net Zero World Initiative driven by member nations, philanthropies; Just Transitions member of Core Advisory Team of Climate Smart Women Energy Leadership Program, engaging women energy leaders from 8 partner nations (2022-present)
- ORNL PI for DOE-funded “Agri-solar Clearinghouse,” led by the National Center for Appropriate Technology (2021-2023) and funded by the DOE Solar Energy Technologies Office, including social acceptability studies (2021-present)
- Investigator on Diversity, Equity and Inclusion in STEM project (Diversity Equity and Inclusion in Science Technology and Math) for Water Power Technologies Office (2023-present)

## PREVIOUS PROJECTS

- Author of Energy Chapter of 5<sup>th</sup> National Climate Assessment, US Global Change Research Program (2021-2023)
- Stakeholder engagement lead (2022-2024) and lead for environmental effects analysis (environmental supply curves) (2013-2020) for terrestrial biomass for bioenergy on “Supply Scenario Analysis,” focusing on strategies and feedstocks to achieve a billion tons of biomass for bioenergy and bioproducts in the 2023 Billion Ton Report, DOE Bioenergy Technologies Office
- Investigator for “Visualizing Ecosystem Service Portfolios of Agricultural and Forested Biomass Production,” focusing on pesticide effects, carbon and nutrient valuation, and stakeholder engagement. DOE Bioenergy Technologies Office (2018-2024).
- Investigator on “Quantifying & Visualizing Progress Toward Sustainability,” DOE Bioenergy Technologies Office (2010-2015, 2017-2022), focusing on sustainability targets for environmental and socioeconomic indicators, including landscape design case study in Iowa
- Contributor to “Attribution” chapter of EPA-led Triennial Report to Congress on Biofuels (2019-2023).
- Investigator and member of Novel Engagements Team on national laboratory consortium project “Energy Improvements in Rural or Remote Areas” DOE Office of Clean Energy Demonstration, focusing on rural community and renewable energy aspects of Bipartisan Infrastructure Law, including performance metrics and stakeholder engagement (2022-2023)
- PI of “Climate and Energy Equity in the South: A Workshop and Research Agenda,” ORNL Climate Change Institute (CCSI) (2021)
- Co-editor of special issue of *Biological Conservation* on renewable energy and biodiversity
- Contributor to planning “Infrastructure Resilience and National Security: A Workshop and Research Agenda” CCSI (2021)
- Investigator on “Bioenergy in Appalachia,” including stakeholder interactions and sustainability indicators (2021-2022)
- Investigator on biomanipulation, habitat value, and PCB trends in DOE/Environmental Management projects (2018-2023)
- Investigator on “Inventory of [Environmental Justice]-Relevant Data to Link Climate-Smart, Clean Energy Investments with Social and Environmental Justice Goals” CCSI (2021)
- Investigator on “Scientific Methods for Biomass Reference Scenarios” (2019-2021)
- Lead scientist developing internal ORNL strategy for how environmental management scientists can publish more in the peer-reviewed literature
- Principal Investigator and Lead Editor for multi-agency and multi-laboratory Volume 2 of the Billion Ton 2016 report on environmental sustainability effects of simulated biomass across the U.S. (2015-2018), including coordination of investigators, peer review workshops
- Principal Investigator of “Sustainable Development of Algae for Biofuels,” DOE (2012-2018), environmental effects of algae production in the Billion Ton report and sustainability studies and best management practices such as hydraulic conductivity of soils for ponds, resource analysis, and experimental studies to increase yields using ecological strategies
- Investigator for environmental sustainability tasks for biomass energy, including development of sustainability indicators and targets, consideration of various contexts for applying indicators, development of best management practices, comparison of scales of environmental effects of ethanol and gasoline, “Defining Sustainability” project, DOE (2008-2016)
- Lead author and team leader for microalgae resource analysis in Billion Ton 2016 report (2015-2016)

- Investigator applying sustainability constraints and opportunities in national estimates of biomass supply for Billion Ton 2016, “Supply Forecast and Analysis” project (2013-2014)
- Investigator of land-use issues related to biomass energy, including development of causal analysis framework for indirect land-use change driven by bioenergy, DOE (2009-2016)
- Principal Investigator of “A Case-Study Approach for Determining Benefits of Ecological Risk Assessment Frameworks for Siting Wind Energy Facilities,” DOE (2009-2012)
- Independent consultant to Shaw Environmental, Inc., for screening-level ecological risk assessment at Aerojet Superfund site in California, USA (2008-2013)
- Lead author of EPA-funded white paper “Improving analysis of environmental effects of bioenergy feedstock production: Identifying issues and endpoints,” Versar (2011)
- Principal Investigator of “A Framework for Developing Management Goals for Species at Risk on Military Installations,” U.S. Army Corps of Engineers (2006-2011)
- Investigator for project “Spatial Modeling of Geographic Patterns in Biodiversity and Biofuel Production” (2008-2009), Oak Ridge National Laboratory Laboratory-Directed R&D Fund
- Advisor to “Wind Resource Data Active Archival and Integration,” DOE (2008-2010)
- Planning team for international workshop on Land-use Change and Bioenergy in Vonore, TN, sponsored by DOE (2009)
- Advisor on conceptual models for U.S. Army Corps of Engineers Environmental Benefits Analysis Program (2008)
- Principal Investigator of “Problem Formulation and Analysis Plan for the Assessment of Potential Human Health Risks posed by Microbial Pathogens in Land-Applied Biosolids,” EPA (2007-2008)
- Investigator for Water Quality Protection Plan for White Oak Creek on the DOE Oak Ridge Reservation, DOE (2008)
- Contributor to white paper on benefits of the East Fork Poplar Creek biological monitoring program on the DOE Oak Ridge Reservation, DOE (2008)
- Principal Investigator of “Determining Relative Value of Ecosystem Services” (2006-2007), Oak Ridge National Laboratory seed money fund
- Investigator for “Developing Metrics for Assessment of Ecological Benefits of Energy Efficiency and Renewable Energy R&D Programs,” DOE (2007)
- Advisor to DOE and National Wind Coordinating Committee on wildlife risk assessment related to wind energy facilities (2005-2007), DOE
- Risk assessor for regional environmental simulation project implemented for Fort Benning, GA (2001-2007), Department of Defense Strategic Environmental Research and Development Program (SERDP).
- Co-Principal Investigator of project to implement a population model for evaluating risk to sage grouse from habitat disturbance from oil and gas development in northeastern Utah (2004-2006), Bureau of Land Management.
- Principal Investigator of framework for assessment of risks of military testing and training to natural resources, with emphasis on aircraft overflights, artillery, and tracked vehicles. Demonstration at Yuma Proving Ground, Sonoran Desert, AZ (1998-2001, 2005-2006), SERDP.
- Developer/manager of ecological components of TRIM.FaTE, a transport, fate and ecological exposure model for persistent air pollutants (1998-2006), EPA Office of Air Quality Planning and Standards.
- Lead investigator of habitat valuation project for contaminated sites on the Oak Ridge Reservation (2005), Bechtel-Jacobs, LLC.
- Contributor to feasibility study for contaminated pond restoration (2005), Bechtel-Jacobs, LLC.

- Principal Investigator of project to develop tools for terrestrial ecological risk assessment at petroleum refinery, pipeline or landfarm sites (2000-2004), U. S. Department of Energy (DOE).
- Developer of framework for Net Environmental Benefit Analysis for petroleum-contaminated sites (2000-2004), DOE
- Co-Principal Investigator of project to develop spatial assessment methods and population models for evaluating risk to wildlife and vegetation at petroleum exploration & production sites (2000-2004), DOE.
- Ecological risk assessor for project on integrated risk assessment for alternative wastewater systems (2003-2004), U.S. Environmental Protection Agency (EPA).
- Principal Investigator for evaluation of ecological risks associated with the land application of municipal sewage sludge in semi-arid rangeland, Douglas-fir forest, loblolly pine plantations, and eastern deciduous forest ecosystems (1995-1998), EPA Office of Research and Development.
- Ecological Risk Assessment Team Leader and contributor to several risk assessments for contaminated Oak Ridge facilities (1995-1998), DOE.
- Developer of regression models for the uptake of contaminants by plants and soil invertebrates (1997-1998), DOE.
- Developer of benchmarks for toxicity of plants and soil invertebrates to chemicals in soil (1996-1997), DOE.
- Contributor to ecological risk assessment for Anniston, AL, Chemical Agent Disposal Facility (1997).
- Participant in comparative risk assessment in Cairo, Egypt and pollution prevention programs in developing countries as an American Association for the Advancement of Science Diplomacy Fellow at the U. S. Agency for International Development (1993-1994).
- Graduate research assistant investigating the role of nonaqueous phase liquids in the microbial biodegradation of organic chemicals, Cornell University (1992-1993).

**HONORS:** Led successful nomination packages for 5 elected AAAS fellows. ORNL Special Event Award (2023); DOE Energy Efficiency and Renewable Energy-Rock Star Award (2017); Oak Ridge National Laboratory Environmental Sciences Division Science Serving Society Team Award for Billion Ton report, volume 1 (2016); Special Event Award for algae chapter of Billion Ton report, volume 1 (2016); Holroyd (Science Alumni) Award Winner, LaSalle University (2014); **Elected to rank of AAAS Fellow by the American Association for the Advancement of Science (2008)**; Oak Ridge National Laboratory Environmental Sciences Division Distinguished Scientific Achievement Award (2002); National Science Foundation Graduate Fellowship awardee (1988-1991); Cornell University Olin and A. D. White graduate fellowships awardee (1987-1992)

**OFFICES:** Fifth National Climate Assessment—Energy Chapter Author (2021-2023); Reviewer for Alfred P. Sloan Foundation (2022); Reviewer of EPA CADLink [causal analysis] User Guide (2019), Reviewer for National Research Council (NRC) Report “Gene Drives on the Horizon: Advancing Science, Navigating Uncertainty, and Aligning Research with Public Values” (2016); NRC Committee on Sustainable Development of Algal Biofuels (2011-2012); Review Panel for USEPA’s “Biofuels and the Environment: First Triennial Report to Congress” (2011); Review Panel for USEPA Causal Analysis/Diagnosis Decision Information System for aquatic impairments (2008-2010); Blue Ridge Sustainability Institute Senior Advisor (2008-2012); Army Corps of Engineers Waterways Experiment Station Environmental Benefits Analysis Conceptual Model Working Group (2008), Editorial board of *Human and Ecological Risk Assessment* (2005-2010); editorial board of *Environmental Toxicology and Chemistry* (2003-2010); Society of Environmental Toxicology and Chemistry (SETAC) North America Technical Committee (2004-2012); Reviewer for U.S. Army Corps of Engineers proposals (2008);

National Wind Coordinating Committee Wildlife Working Group and Risk Assessment Subgroup (2004-2007); SETAC Contaminated Soils Advisory Group (1999-present); Invited participant in EPA Ecorisk Workshop for Air Toxics (2006); reviewer of Ecological Society of America SEEDS fellowship applications (2005); member of interagency group on assessing the value of environmental services (2004-2005); consultant to Surface Impoundments Study Subcommittee of EPA Science Advisory Board's Environmental Engineering Committee (2001-2002); peer review panel for EPA Ecological Soil Screening Levels; peer review panel for EPA STAR wildlife toxicology proposals (2001); invited participant in SETAC Pellston workshop on contaminated soils (1998); consultant to EPA Science Advisory Board Air Toxics Monitoring Subcommittee; former member of NSF/EPA Water and Watersheds Peer Review Panel; member of City of Oak Ridge Environmental Quality Advisory Board (1998-2000).

## BOOK

Suter, G. W. II, R. A. Efroymson, B. E. Sample and D. S. Jones. 2000. *Ecological Risk Assessment for Contaminated Sites*. CRC/Lewis Press, Boca Raton, FL.

## PEER-REVIEWED PUBLICATIONS

- Efroymson RA et al. submitted. Energy justice indicators for the transition to renewables: Siting bioenergy facilities. *Energy Research & Social Science*.
- Efroymson RA, Kreig JAF, Jager HI. In revision. Perennial energy crops provide net positive ecosystem services to beneficial insects in an agricultural landscape. *Ecosphere*.
- Efroymson RA, Parish ES, Kline KL, Dale VH, Jager HI. In revision. Setting targets for indicators of sustainable resource management. *BioScience*.
- Shaw W, Autrey T, Bare S, . . . Efroymson R. 2024. A U.S. perspective on closing the carbon cycle to defossilize difficult-to-electrify segments of our economy. *Nature Reviews Chemistry*8:376-400
- Efroymson RA, Langholtz MH, Kline KL, Ugarte D De La Torre, Hellwinckel C, Hawkins TR, Parish ES, Shell M, Davis MR, English BC, Field J. 2024. Sustainability and good practices. Chapter 6 in *2023 Billion-Ton Report*. MH Langholtz (ed.) Oak Ridge National Laboratory, Oak Ridge, TN. [BETO: Billion-Ton 2023 | Department of Energy](#)
- Zamuda CD, Bilello DE, Carmack J, Davis XJ, Efroymson RA, Goff KM, Hong T, Karimjee A, Loughlin DH, Upchurch S, Voisin N. 2023. Chapter 5. Energy supply, delivery, and demand. 5<sup>th</sup> National Climate Assessment. [Energy Supply, Delivery, and Demand \(globalchange.gov\)](#)
- Efroymson RA, Peterson MJ, Jett RT, Carter ET, Griffiths NA, Fortner AM, Derolph CR, Ku P, Matson PG, Pilla RM, Mathews TJ. 2024. Remedial effectiveness of a pond biomanipulation: habitat value and PCB concentrations in fish. *Journal of Hazardous Materials* 461:132587.
- Jager HI, Surendran Nair S, Efroymson RA, DeRolph CR, Parish ES, Wang G. 2023 Ecosystem services from partially harvested riparian buffers can offset biomass production costs. *Science of the Total Environment* 889:164199.
- Matson PG, Stevenson LM, Efroymson RA, Jett RT, Jones MW, Peterson MJ, Mathews TJ. 2022. Variation in natural attenuation rates of polychlorinated biphenyls (PCBs) in fish from streams and reservoirs in East Tennessee observed over a 35-year period. *Journal of Hazardous Materials* 438:129427.
- Jager HI, Hilliard MR, Langholtz MH, Efroymson RA, Brandt CC, Nair SS, Kreig JAF. 2022. Ecosystem service benefits to water users from perennial biomass production. *Science of the Total Environment* 834:155255.
- Jager HI, Efroymson RA, McManamay R. 2021. Renewable energy and biological conservation in a changing world. *Biological Conservation* 263:109354.
- Parish E, Dale V, Davis M, Efroymson R, Hilliard M, Kline K, Jager H, Xie F. 2021. An indicator-based

- approach to sustainable management of natural resources. Chapter 14 of *Data Science Applied to Sustainability Analysis 2020*. Co-edited by Jennifer Dunn and Prasanna Balaprakash for Elsevier.
- Efroymson RA, Jager HI, Mandal S, Parish ES, Mathews TL. 2021. Better management practices for environmentally sustainable production of microalgae and algal biofuels. *Journal of Cleaner Production* 289:125150.
- Efroymson RA, Peterson MJ. 2020. Publishing environmental assessment and management science: Crossing the hurdles. *BioScience* 70:1015-1026. <https://doi.org/10.1093/biosci/biaa107>
- Efroymson RA, Pattullo MB, Mayes MA, Mathews TJ, Mandal S, Schoenung S. 2020. Exploring the sustainability and sealing mechanisms of unlined ponds for growing algae for fuel and other commodity-scale products. *Renewable and Sustainable Energy Reviews* 121:109708
- Jager HI, RA Efroymson, and LM Baskaran. 2019. Avoiding conflicts between future freshwater algae production and water scarcity in the United States at the energy-water nexus. (Special Issue, Energy-Water Nexus). *Water* 11(4):836
- Pattullo MB, Mayes MA, Mandal S, Mathews TJ, Dunlap J, Perfect E, McKay LD, Nield EV, Efroymson RA. 2019. Soil sealing by algae: An alternative to plastic pond liners for outdoor algal cultivation. *Algal Research* 38:101414
- Mandal S, Shurin JB, Efroymson RA, Mathews TJ. 2018. Functional divergence in nitrogen uptake rates explains diversity-productivity relationship in microalgae communities. *Ecosphere* 9:e02228, <https://doi.org/10.1002/ecs2.2228>
- Mandal S, Shurin J, Efroymson R, Mathews T. 2018. Heterogeneity in nitrogen sources enhances productivity and nutrient use efficiency in algal polycultures. *Environmental Science & Technology* 52:3769-3776.
- Dale, V. H., Jager, H. I., Wolfe, A., Efroymson, R. 2018. Risk and resilience in an uncertain world. *Frontiers in Ecology and Environment* 16 (1) <https://doi.org/10.1002/fee.1759>
- Jager H, Efroymson R. 2018. Can upstream biofuel production increase the flow of downstream ecosystem goods and services? *Biomass and Bioenergy* 114:125-131.
- Singh, N., Kline, K. L., Efroymson, R. A., Bhaduri, B., & O'Banion, B. (2017). Uncertainty in Estimates of Bioenergy-Induced Land Use Change. Chapter 10 in *Bioenergy and Land Use Change* (pp. 141–153). Zhangcai Qin (ed.) John Wiley & Sons, Inc. <https://doi.org/10.1002/9781119297376.ch10>
- U.S. Department of Energy. 2017. 2016 *Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy, Volume 2: Environmental Sustainability Effects of Select Scenarios from Volume 1*. R. A. Efroymson, M. H. Langholtz, K.E. Johnson, and B. J. Stokes (Eds.), ORNL/TM-2016/727. Oak Ridge National Laboratory, Oak Ridge, TN. 642p. doi 10.2172/1338837
- Efroymson R, Coleman A, Wigmosta M, Pattullo M, Mayes M, Langholtz M. Qualitative analysis of environmental effects of algae production. 2017. In U.S. Department of Energy. 2016 *Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy, Volume 2: Environmental Sustainability Effects of Select Scenarios from Volume 1*. R. A. Efroymson, M. H. Langholtz, K.E. Johnson, and B. J. Stokes (Eds.), ORNL/TM-2016/727. Oak Ridge National Laboratory, Oak Ridge, TN. 642p. doi 10.2172/1338837
- Johnson K, Efroymson R, Langholtz M. 2017. Introduction. In U.S. Department of Energy. 2016 *Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy, Volume 2: Environmental Sustainability Effects of Select Scenarios from Volume 1*. R. A. Efroymson, M. H. Langholtz, K.E. Johnson, and B. J. Stokes (Eds.), ORNL/TM-2016/727. Oak Ridge National Laboratory, Oak Ridge, TN. 642p. doi 10.2172/1338837
- Efroymson R, Langholtz M, Johnson K, Negri C, Turhollow A, Kline K, Bonner I, Dale V. 2017. Synthesis, Interpretation, and Strategies to Enhance Environmental Outcomes. 2016 *Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy, Volume 2: Environmental Sustainability Effects of Select Scenarios from Volume 1*. R. A. Efroymson, M. H. Langholtz, K.E.

- Johnson, and B. J. Stokes (Eds.), ORNL/TM-2016/727. Oak Ridge National Laboratory, Oak Ridge, TN. 642p. doi 10.2172/1338837
- Efroymson RA, Kline KL, Angelsen A, Verburg PH, Dale VH, Langeveld JW, McBride A. 2016. A causal analysis framework for land-use change and the potential role of bioenergy policy. *Land Use Policy* 59:516-527.
- Efroymson R, Coleman A, Wigmosta M, Schoenung S, Sokhansanj S, Langholtz M, Davis R. 2016. Microalgae. In. U.S. Department of Energy. *2016 Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy, Volume 1: Economic Availability of Feedstocks*. M. H. Langholtz, B. J. Stokes, and L. M. Eaton (Leads), ORNL/TM-2016/160. Oak Ridge National Laboratory, Oak Ridge, TN. 448p.
- 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
- Dale VH, RA Efroymson, KL Kline, MS Davitt. 2015. A framework for selecting indicators of bioenergy sustainability. *Biofuels, Bioproducts and Biorefining* 9:435-446 DOI: 10.1002/bbb.1562
- Jager HI, RA Efroymson, JJ Opperman, MR Kelly. 2015. Spatial design principles for sustainable hydropower development in river basins. *Renewable & Sustainable Energy Reviews* 45:808-816
- Efroymson RA, VH Dale. 2015. Environmental indicators for sustainable production of algal biofuels. *Ecological Indicators* 49:1-13 10.1016/j.ecolind.2014.09.028
- Parish ES, KL Kline, VH Dale, RA Efroymson, AC McBride, TL Johnson, MR Hilliard, JM Bielicki. 2013. Comparing scales of environmental effects from gasoline and ethanol production. *Environmental Management* 51:307-338. DOI: 10.1007/s00267-012-9983-6
- Dale VH, RA Efroymson, KL Kline, MH Langholtz, PN Leiby, GA Oladosu, MR Davis, ME Downing, MR Hilliard. 2013. Indicators for assessing socioeconomic sustainability of bioenergy systems: A short list of practical measures. *Ecological Indicators* 26:87-102
- Efroymson, R. A., V. H. Dale, K. L. Kline, A. C. McBride, J. M. Bielicki, R. L. Smith, E. S. Parish, P. E. Schweizer, D. M. Shaw. 2013. Environmental indicators of biofuel sustainability: What about context? *Environmental Management* 51:291-306.
- NRC Committee on the Sustainable Development of Algal Biofuels. 2012. Sustainable Development of Algal Biofuels in the United States. National Research Council of the National Academies. National Academy Press, Washington, DC.
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- McBride, A, VH Dale, L Baskaran, M Downing, L Eaton, RA Efroymson, C Garten, KL Kline, H Jager, P Mulholland, E Parish, P Schweizer, and J Storey. 2011. Indicators to support environmental sustainability of bioenergy systems. *Ecological Indicators* 11:1277-1289.
- Peterson, M. J., R. A. Efroymson, S. M. Adams. 2011. Long-term biological monitoring of an impaired stream: Synthesis and environmental management implications. *Environ. Manage.* 47:1125-1140.
- Bruins, R., S. K. Hoekman, R. Efroymson, A. Aden, A. Hecht. November 2010. Transportation fuels for the 21<sup>st</sup> Century. *EM Magazine* pp. 26-32.
- Efroymson, R.A., H.I. Jager, and W.W. Hargrove. 2010. Valuing wildlands. Pp. 157-185. In *Environmental Risk Assessment and Management from a Landscape Perspective*. L. Kapustka and W. Landis (eds.). John Wiley & Sons, New York.
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- Efroymson, R. A. 2009. Editorial. Wind Energy: The next frontier for ecological risk assessment. *Human and Ecological Risk Assessment* 15:419-422.

- Efroymson, R. A., V. A. Morrill, V. H. Dale, T. F. Jenkins, and N. R. Giffen. 2009. Habitat disturbance at explosives-contaminated ranges. pp. 253-276. In Sunahara, G., G. Lotufo, R. Kuperman, and J. Hawari (eds.) *Ecotoxicology of Explosives*, CRC Press, Boca Raton, FL.
- Efroymson, R. A., M. J. Peterson, D. S. Jones, and G. W. Suter II. 2008. The Apache Longbow-Hellfire Missile Test at Yuma Proving ground: Introduction and problem formulation for a multiple stressor risk assessment. *Hum. Ecol. Risk Assess.* 14:854-870.
- Efroymson, R. A., W. W. Hargrove, and G. W. Suter II. 2008. The Apache Longbow-Hellfire Missile Test at Yuma Proving Ground: Ecological risk assessment for helicopter overflight. *Hum. Ecol. Risk Assess.* 14:871-897.
- Jones, D. S., R. A. Efroymson, W. W. Hargrove, G. W. Suter II, and L. L. Pater. 2008. The Apache Longbow-Hellfire Missile Test at Yuma Proving Ground: Ecological risk assessment for missile firing. *Hum. Ecol. Risk Assess.* 14:898-918.
- Peterson, M. J., W. W. Hargrove, and R. A. Efroymson. 2008. The Apache Longbow-Hellfire missile test at Yuma Proving Ground: Ecological risk assessment for tracked vehicle movement across desert pavement. *Hum. Ecol. Risk Assess.* 14:919-946.
- Dale, V.H., F. Akhtar, M. Aldridge, L. Baskaran, M. Berry, M. Browne, M. Chang, R. Efroymson, C. Garten, Jr., E. Lingerfelt, C. Stewart. 2008. Modeling the effects of land use on the quality of water, air, noise, and habitat for a five-county region in Georgia. *Ecology and Society* 13(1):10. [online] URL: <http://www.ecologyandsociety.org/vol13/iss1/art10/>
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- Efroymson, R. A., D. S. Jones, and A. J. Gold. 2007. An ecological risk assessment framework for effects of onsite wastewater treatment systems and other localized sources of nutrients on aquatic ecosystems. *Human and Ecological Risk Assessment* 13:574-614.
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- Jager, H. I., E. A. Carr, and R. A. Efroymson. 2006. Simulated effects of habitat loss and fragmentation on a solitary mustelid predator. *Ecological Modelling* 191:416-430.
- Dale, V., M. Aldridge, T. Arthur, L. Baskaran, M. Berry, M. Chang, R. Efroymson, C. Garten, C. Stewart, and R. Washington-Allen. 2006. Bioregional planning in Central Georgia. *Futures* 38:471-489.
- Efroymson, R. A., V. H. Dale, L. M. Baskaran, M. Chang, M. Aldridge, and M. Berry. 2005. Planning transboundary ecological risk assessments at military installations. *Hum. Ecol. Risk Assess.* 11:1193-1215.
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- Jager, H. I., R. A. Efroymson, K. Sublette, and T. L. Ashwood. 2005. Unnatural landscapes in ecology: generating the spatial distribution of brine spills. *Environmetrics* 16:687-698.
- Dale, V., D. Druckenbrod, L. Baskaran, M. Aldridge, M. Berry, C. Garten, L. Olsen, R. Efroymson, and R. Washington-Allen. 2005. Vehicle impacts on the environment at different spatial scales: Observations in west central Georgia, USA. *Journal of Terramechanics*.42:383-402



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