

RESEARCH INTERESTS

Energy systems modeling; ecosystem energetics; thermodynamics; theoretical ecology; complex network analysis; ecological network theory; embodied energy analysis; numerical methods in complex modeling; energy return on investment; and mathematics.

EDUCATION

Ph.D. (Ecology), University of Georgia, 2006, ecological network analysis under the direction of Bernard C. Patten.

M.S.M.E. University of Cincinnati, 1993, structural dynamics under the direction of Randy Allemang. General Electric's Advanced Courses in Engineering graduate

B.S.M.E. University of Florida, 1989, with honors, President of Pi Tau Sigma — Mechanical Engineering Honor Society.

PROFESSIONAL POSITIONS HELD

- 2016 – present Contributing Faculty, Odum School of Ecology, University of Georgia, Athens, GA
- 2013 – present Associate Professor, University of Georgia, College of Engineering, Athens, GA
- 2015 – 2016 Environmental Engineering Program Coordinator, University of Georgia College of Engineering, Athens, GA
- 2007 – 2013 Assistant Professor, University of Georgia, Faculty of Engineering, Athens, GA
- 2003 – 2007 Director of Facilities, Department of University Housing, University of Georgia, Athens, GA
- 1997 – 2003 Mechanical Engineer, Department of University Housing, University of Georgia, Athens, GA
- 1993 – 1997 Engineering Project Leader, United Technologies Corporation, Carrier Transicold Division, Athens, GA
- 1991 – 1993 Production Design Engineer, General Electric Corporation, Aircraft Engines Division, Cincinnati, OH
- 1991 – 1991 Manufacturing Methods Engineer, General Electric's two year Engineering Development program, Aircraft Engines Division, Cincinnati, OH
- 1990 – 1991 Heat Transfer Engineer, General Electric's two year Engineering Development program, Aircraft Engines Division, Cincinnati, OH
- 1990 – 1990 Mechanical Design Engineer, General Electric's two year Engineering Development program, Aircraft Engines Division, Cincinnati, OH
- 1987 – 1988 Engineering Co-op — Tool Design Engineer, Motorola Corporation, Paging Division, Boynton Beach, FL

PUBLICATIONS

Invited Scholarly Reviews (2)

2. Schramski JR. 2018. The Significance of EROI. Book Review: Energy Return on Investment: A Unifying Principle for Biology, Economics, and Sustainability, by C.A.S. Hall. Springer, (2017). *Bioscience*. 68(1) 823-824, <https://doi.org/10.1093/biosci/biy078>. Commissioned by James Verdier, Senior Editor.
1. Schramski JR 2013. Book Review: Introduction to Systems Ecology, by S.E. Jørgensen. CRC Press, Boca Raton, FL USA (2012). *Ecological Engineering* 57:8-9. Commissioned by Bill Mitch, Senior Editor.

Refereed Scholarly Articles Currently Under Peer Review (1)

1. Woodson CB, Schramski JR, and Joye SB, 2019. Food Web complexity weakens size-based constraints on the pyramids of life. In review. *Science Advances*.

Refereed Scholarly Articles (26)

26. Schramski JR, Woodson CB, Steck G, Munn D, Brown JH. 2019. Declining country-level food self-sufficiency suggests future food insecurities. *Biophysical Economics and Resource Quality*. 4(12) 1-9, <https://doi.org/10.1007/s41247-019-0060-0>.
25. Leiva B, Ramirez OA, Schramski JR. 2019. A framework to consider energy transfers within growth theory. *Energy*. 178:624-630 <https://doi.org/10.1016/j.energy.2019.04.169>. **[Mr. Leiva is a PhD student advised by Dr. Schramski]**
24. Woodson CB, Schramski JR. Joye SB, 2018. A unifying theory for top-heavy ecosystem structure in the ocean. *Nature Communications*. 9(23) 1-8. <https://doi.org/10.1038/s41467-017-02450-y>.
23. Schramski JR, Gattie DK, Brown JH. 2015. Human domination of the biosphere: rapid discharge of the earth-space battery foretells the future of humankind. *Proceedings of the National Academy of Sciences*. 112 (31) 9511-9517.
22. Perryman ME and Schramski JR. 2015. Evaluating the relationship between natural resource management and agriculture using embodied energy and eco-exergy analyses: a comparative study of nine countries. *Ecological Complexity*. 22:152-161. **[Ms. Perryman is a Masters student advised by Dr. Schramski]**
21. Schramski JR, Dell AI, Grady JM, Sibly RM, Brown JH, 2015. Metabolic theory predicts whole-ecosystem properties. *Proceedings of the National Academy of Sciences*. 112(8) 2617-2622.
20. Schramski JR, Jacobsen KL, Smith TW, Williams MA, and Thompson TM. 2013. Energy as a potential systems-level indicator of sustainability in organic agriculture: Case study model of a diversified, organic vegetable production system. *Ecological Modelling*. 267:102-114.
19. McKay SK, Schramski JR, Conyngham JN, Fischenich JC. 2013. Assessing upstream fish passage connectivity with network analysis: *Ecological Applications*. 23(6): 1396-1409. **[Mr. McKay is a Doctoral student advised by Dr. Schramski]**

18. Kazanci C, Schramski JR, Bastianoni S. 2012. Individual Based Emergy Analysis: A Lagrangian Model of Energy Memory. *Ecological Complexity*. 11:103-108.
17. Hester N, Li K, Schramski JR, Crittenden J. 2012. Dynamic modeling of potentially conflicting energy reduction strategies for residential structures in semiarid climates. *Journal of Environmental Management*. 97:148-153.
16. Schramski JR, Rutz, Z, Gattie, DG, Li K. 2011. Trophically balanced sustainable agriculture. *Ecological Economics*, 72:88-96.
15. Gattie DK, Kellam NN, Schramski JR, Walther J. 2011. Engineering education as a complex system. *European Journal of Engineering Education*, 36(6):521-535.
14. Schramski JR, Kazanci C, Tollner EW. 2011. Network environ theory, simulation, and EcoNet 2.0. *Environmental Modelling & Software*, 26(4):419-428.
13. Larocque GR, Mailly D, Yue T-X, Anand M, Peng C, Kazanci C, Etersson M, Goethals P, Jørgensen SE, Schramski JR, McIntire EJB, Marceau DJ, Chen B, Chen GQ, Yang ZF, Novotna B, Luckai N, Bhatti JS, Liu J, Munson A, Gordon AM, Ascough II JC. 2011. Common challenges for ecological modeling. *Ecological Modelling*, 222(14):2456-2468.
12. Schramski JR and Gattie DK (Eds). 2009. Special Issue and editorial, *Ecological Modelling*, "Ecological Network Theory", 220(22):3111-3240 (129p).
11. Schramski JR, Patten BC, Kazanci C, Gattie DK, Kellam NN. 2009. The Reynolds transport theorem: Application to ecological compartment modeling and case study of ecosystem energetics. *Ecological Modelling*, 220(22):3225-3232.
10. Tollner EW, Schramski JR, Kazanci C, Patten B. 2009. Implications of network particle tracking (NPT) for ecological model interpretation. *Ecological Modelling*, 220(16):1904-1912.
9. Matamba L, Kazanci C, Schramski JR, Alexander P, Blessing M, Patten BC, 2009. Throughflow analysis: A stochastic approach. *Ecological Modelling*, 220(22):3174-3181.
8. Schramski JR and Gattie DK. 2009. Cross-Disciplinary Informed Ecological Network Theory. *Ecological Modelling*, 220(22):3111-3112.
7. Tollner EW, Kazanci C, Schramski JR, Patten BC, 2009. Control system approaches to ecological systems analyses – invariants and frequency response. *Ecological Modelling*, 220(22):3233-3240.
6. Bata SA, Borrett SR, Patten BC, Whipple SJ, Schramski JR, Gattie DK. 2007. Equivalence of throughflow- and storage-based environs, *Ecological Modelling*, 206(3-4):400-406.
5. Whipple SJ, Borrett SR, Patten BC, Gattie DK, Schramski JR, Bata SA. 2007. Indirect effects and distributed control in ecosystems: Comparative network environ analysis of a seven-compartment model of nitrogen flow in the Neuse River Estuary, USA — Time series analysis. *Ecological Modelling*, 206(1-2):1-17.
4. Schramski JR, Gattie DK, Patten BC, Bata SA, Whipple SJ, Borrett SR, Fath BD. 2007. Indirect effects and distributed control in ecosystems: Distributed control in the environ networks of a seven-compartment model of nitrogen flow in the Neuse River Estuary, USA — Time series analysis. *Ecological Modelling*, 206(1-2):18-30.

3. Gattie DK, Schramski JR, Bata SA. 2006. Analysis of microdynamic environ flows in an ecological network. *Ecological Engineering*, 28(3):187-204.
2. Schramski JR, Gattie DK, Patten BC, Borrett SR, Fath BD, Thomas CR, Whipple SJ. 2006. Indirect effects and distributed control in ecosystems: Distributed control in the environ networks of a seven-compartment model of nitrogen flow in the Neuse River Estuary, USA — Steady-state analysis. *Ecological Modelling*, 194(1-3):189-201.
1. Gattie DK, Schramski JR, Borrett SR, Patten BC, Bata SA, Whipple SJ. 2006. Indirect effects and distributed control in ecosystems: Network environ analysis of a seven-compartment model of nitrogen flow in the Neuse River Estuary, USA — Steady-state analysis. *Ecological Modelling*, 194(1-3):162-177.

Refereed Conference Proceedings (In Print) (2)

2. Luper D, Kazanci C, Schramski JR, Arabnia HR. 2011. System decomposition for temporal concept analysis, 19th International Conference on Conceptual Structures (ICC 2011, Derby, UK, July, 25-29, 2011), Publisher: Springer, **Acceptance Rate: 60%. [Mr. Luper is a Doctoral student advised by Dr. Schramski]**
1. Luper D, Kazanci C, Schramski JR, Arabnia HR. 2011. Flow decomposition in complex systems, 8th International Conference on Information Technology: New Generations (ITNG 2011, Las Vegas, USA, April, 11-13, 2011), Publisher: IEEE Computer Society CPS, **Acceptance Rate: 29%. [Mr. Luper is a Doctoral student advised by Dr. Schramski]**

Magazines (1)

1. Schramski JR, Tilley DR, and Carter, TL. 2010. Greening the Green Roof System—A Comparative Look at Three Roofing Systems through the Lens of Emergy. *Living Architecture, The Research Issue*. 12(2):24-27.

Invited Seminars/Lectures/Expert Participant (21)

21. Schramski JR, Biophysical and Thermodynamic Limits to Civilization. Opening Keynote Plenary for Global Bioeconomy Symposium 2018, Berlin Germany, April 19, 2018.
20. Schramski JR, Steck GH, Munn DB, Brown JH. Energy Trends in the Global Food System. Invited Speaker. American Chemical Society National Meeting New Orleans Conference, March 21, 2018.
19. Schramski JR, Steck GH, Munn DB, Brown JH. Food Security: Thermodynamics, Ecology, and Economics. Invited Speaker. University of Texas Energy Institute, Energy Symposium speaker series, University of Texas, Austin, TX January 25, 2018.
18. Schramski JR, Human domination of the biosphere: the thermodynamics of civilization. Invited Skype lecture in Global Sustainability, Appalachian State University, Boone, NC, April 10, 2017.

John R. Schramski P.E.

17. Schramski JR, Steck GH, Munn DB, Berecz A, Brown JH. Food Security: Thermodynamics, Ecology, and Economics. Invited Speaker. Agriculture & Applied Economics Seminar Series, University of Georgia, Athens, GA, March 29, 2017.
16. Schramski JR and Gattie DK. Access to energy and critical questions for sustainability. Invited Foundation Fellows UGA Chapel Lecture. University of Georgia, Athens GA, February 24, 2017.
15. Schramski JR, Climate change panel discussion, Invited expert. UGA Roosevelt Institute & Georgia Political Review, Athens GA, February, 15, 2017.
14. Schramski JR, Global sustainability: A city's energy-based role, Invited speaker. UGA's Osher Lifelong Learning Institute, Athens GA, January 17, 2017.
13. Schramski JR, Before the Flood, movie premier and panel discussion, Invited expert. Georgia Climate Change Coalition, Athens GA, October 26, 2016.
12. Schramski JR, Steck G, Munn D, Brown JH. 2016. Food, the Biosphere, and Human Metabolism: Urbanization Data Quantifies Thermodynamic Decay. Featured Speaker. International Society for BioPhysical Economics (ISBPE). American University, Washington D.C., June 24-29, 2016.
11. Schramski JR. Energy Ecology: Trophic-dynamic balance and human domination. Invited Speaker. UGA School of Ecology seminar. University of Georgia, Athens GA. April 12, 2016.
10. Schramski JR. The Energy Crisis. Invited Speaker. UGA School of Ecology Conservation Seminar Series. Invited speaker. University of Georgia, Athens GA, October 28, 2015.
9. Schramski JR. NSF, food, energy, and water whitepaper workshop, Invited expert. Migration of agriculture considering energy and water constraints, Boulder CO, October 21-23, 2015.
8. Schramski JR. The real energy crisis: (biomass depletion) physics + economics = unsustainable civilization. Invited speaker. University of Georgia Honors College, University of Georgia, Athens GA, September 30, 2015.
7. Schramski JR. Human domination of the biosphere: the laws of thermodynamics foretells the future of humankind. Invited Skype lecture in Biology of Sustainability, University of St. Thomas, Minneapolis MN, September, 29, 2015.
6. Schramski JR and Brown JH. The energy crisis: physics vs economics. Invited Speaker. UGA Department of Genetics EDGE lecture series, University of Georgia, Athens GA, August, 28, 2015.
5. Schramski JR, Brown JH. The energy crisis: physics, ecology, economics; Invited Speaker. Ecological Society of America (ESA) Conference, Baltimore Convention Center, Baltimore, MD, August, 10-14, 2015.
4. Schramski JR. The energetics of a sustainable food supply: a biosphere-ecosystem-organism perspective, Invited Speaker. UGA Sustainable Food Systems Seminar Series, University of Georgia College of Agriculture and Environmental Sciences, Athens, GA, February 27, 2014.
3. Schramski JR. Invited Graduate School Instructor, The Thermodynamics of Systems Ecology, Beijing Normal University, Beijing China, June 21-29, 2013.

2. Schramski JR. Synthesizing top-down and bottom-up approaches to ecological energetics, Invited expert. NSF sponsored, National Center for Ecological Analysis and Synthesis, Santa Barbara, CA, July 8-13, 2013.
1. Schramski JR. The Network Mathematics of Sustainable Energy Analysis: Forcing a New Paradigm of Sustainability Research. Invited speaker. Department of Mathematics Seminar Series, University of North Carolina-Wilmington February 17, 2011.

Conference talks (51) * Indicates Presenter

53. ***Schramski JR**. Biosphere, the great acceleration, and the global crisis of unsustainable energy utilization. International Society for Biophysical Economics, Wells College, Aurora NY, June 14, 2018.
52. ***Schramski JR**, Steck GH, Munn DB, Berecz A, Brown JH. Food Security: Thermodynamics, Ecology, and Economics. International Society for Biophysical Economics, Flathead Lake Bio Station, University of Montana, Polson MT, June 21, 2017.
51. ***Schramski JR**, Steck GH, Munn DB, Brown JH. Engineering Food Security in the Anthropocene. American Ecological Engineering Society, Athens GA, May 23, 2017.
50. *Deason M, **Schramski JR**, Energy return on energy invested (EROEI) empirical model of an organic integrated animal and vegetable farm in Kentucky. International Society for BioPhysical Economics (ISBPE). American University, Washington D.C., June 24-29, 2016. **[Mr. Deason is a Masters student advised by Dr. Schramski]**
49. ***Schramski JR**, Steck G, Munn D, Brown JH. Cities, the climax community of humankind, as self-organizing and evolving organisms; Theoretical and empirical evidence of their role in global sustainability. UGA Department of Genetics EDGE lecture series, University of Georgia, Athens GA, August 28, 2016.
48. *Woodson CB, **Schramski JR**. The Influence of Mean Trophic Level on Biomass and Production in Marine Ecosystems. AGU/ASLO/TOS Ocean Sciences Meeting, New Orleans, LA., February 2016.
47. *Shrestha D, Jacobsen KL, Wendroth O, and **Schramski JR**. The effect of intensification on nitrogen losses from diversified vegetable farms. American Society of Horticultural Science (ASHS) conference, New Orleans, LA, August 4-7, 2015.
46. ***Schramski JR**, Brown JH. The future of energy in sustainable design; Association of Environmental Engineers and Scientists (AEESP) conference, Yale University, New Haven, CT, June 14-19, 2015.
45. *Trunnell MM, **Schramski JR**. Modeling a baseline of forest energetics: a method for the evaluation of sustainable energy practices and technologies; CURO Symposium, University of Georgia, Athens GA, March 30-31, 2015. **[Mr. Trunnell is a student advised by Dr. Schramski]**
44. ***Schramski JR**, Jacobsen KL, Brown JH, and Gattie DG. The Metabolism of Mankind: Thermodynamically Out of Balance, Unifying Ecology Across Scales: The Role of Nutrients, Metabolism, and Physiology; Gordon Conference, University of New England, Biddeford ME, July 20-25, 2014.

43. *Perryman ME and **Schramski JR**. Embodied energy requirements for meat calorie versus non-meat calorie production: a comparative study of nine countries. International Systems Ecology Conference, University of Georgia, Athens GA, April 12-14, 2013. **[Ms. Perryman is an undergraduate student advised by Dr. Schramski]**
42. *Perryman ME and Schramski JR. Awarded First Place Paper, physical sciences category. Embodied energy requirements for meat calorie versus non-meat calorie production: a comparative study of nine countries. University of Georgia Center for Undergraduate Research Opportunities (CURO) Conference and Symposium, April 1, 2013. [Ms. Perryman is an undergraduate student advised by Dr. Schramski]
41. *Perryman ME and **Schramski JR**. Awarded First Place Paper, physical sciences category. Embodied energy requirements for meat calorie versus non-meat calorie production: a comparative study of nine countries. *University of Georgia Center for Undergraduate Research Opportunities (CURO) Conference and Symposium*, April 1, 2013. **[Ms. Perryman is an undergraduate student advised by Dr. Schramski]**
40. ***Schramski JR**. Energetics of Sustainable Agriculture. *Fourth Biophysical Economics Conference*. University of Vermont, Burlington VT, October 26-28, 2012.
39. ***Schramski JR**, Jacobsen K, Smith T, Gattie DK. Low Energy Systems Engineering: Designing Trophically Balanced Agriculture. *Degrowth in the Americas International Conference*, Montreal, Quebec, Canada, May 13-19, 2012.
38. *Smith T, **Schramski JR**, Jacobsen K., Williams M. Energetics of Organic Agriculture: Case Study of Community Supported Agriculture in Kentucky. *Degrowth in the Americas International Conference*, Montreal, Quebec, Canada, May 13-19, 2012. **[Mr. Smith is a student advised by Dr. Schramski]**
37. ***Schramski JR**, Jacobsen K. Smith T. The coupling of human and natural systems: agroecological energy systems modelling and case study of a diversified organic vegetable farm in Kentucky, USA. *International Society of Ecological Modellers*. Beijing, China, September 20-23, 2011.
36. ***Schramski JR**, Freeze M. Natural frequencies and mode shapes in the indirect pathways of ecological networks. *European Conference on Ecological Modelling*. Riva del Garda, Italy, May 30 – June 2, 2011.
35. *Keeney-Ritchie M, **Schramski JR**. *Characterization of Vehicle Induced Wake Vortices*, *University of Georgia Curriculum for Undergraduate Research Opportunities Conference*. University of Georgia, Athens Georgia, April 3 & 4, 2011. **[Mr. Keeney-Ritchie is a student advised by Dr. Schramski]**
34. * **Schramski JR**, Freeze M. Patterns in the Indirect Pathways of Ecological Networks, *Institute of Biological Engineering (IBE) Conference*. Atlanta Georgia, March 3-5, 2011.
33. *Kazanci C, Luper D, **Schramski JR**, Patten BC, Whipple SJ, Adams MR. Decomposition of Complex Ecological Networks into Functional Components, *Institute of Biological Engineering (IBE) Conference*. Atlanta Georgia, March 3-5, 2011.

32. ***Schramski JR**, Patten BC, Gattie DK, Kazanci C. Indirect Effects and Distributed Control in Ecosystems, *Institute of Biological Engineering (IBE) Conference*. Atlanta Georgia, March 3-5, 2011.
31. *Patten BC, Whipple SJ, Kazanci C, **Schramski JR**. Network Environ Analysis: Background and Overview, *Institute of Biological Engineering (IBE) Conference*. Atlanta Georgia, March 3-5, 2011.
30. ***Schramski JR**. The Mathematics of Sustainable Energy Analysis: Forcing a New Paradigm of Sustainability Research. University of North Carolina-Wilmington *Department of Mathematics Seminar Series, Invited Presentation*. February 17, 2011.
29. ***Schramski JR**, Rutz ZJ, Gattie DK, Li K. Modeling a Thermodynamic Economy, *Advances in Energy Studies 2010: 7th Biennial International Workshop*. Barcelona Spain, October 16-23, 2010.
28. Johnson WJ, ***Schramski JR**. Low Energy Anthropocentric Systems Conceptual Mapping, *Advances in Energy Studies 2010: 7th Biennial International Workshop*. Barcelona Spain, October 16-23, 2010.
[Mr. Johnson is a student advised by Dr. Schramski]
27. Moore R, Parker L, Roper J, Sarn P, Sisk C, Swain A, ***Schramski JR**. Fossil-Fuel-Free Residential Design, *Advances in Energy Studies 2010: 7th Biennial International Workshop*. Barcelona Spain, October 16-23, 2010.
[Ms. Moore and Mr.'s Parker, Roper, Sarn, Sisk, and Swain are students advised by Dr. Schramski]
26. ***Schramski JR**. Modeling a Trophically Balanced Economy, *USDA Energy in Sustainable Agriculture Workshop*. Athens GA, September 23-25, 2010.
25. *Kazanci C, **Schramski JR**, Bastianoni S, Tollner EW. Agent Based Energy (ABE) Analysis: A Lagrangian Model of Energy Memory. *International Society for the Advancement of Energy Research (ISAER)*. Gainesville FL, January 14 – 16, 2010.
24. ***Schramski JR**, Tollner EW, Gattie DK, Patten BC, Jambeck J. Interdisciplinary Modeling in Engineering and Ecological Compartmental Analysis: Case Study of Ecosystem Energetics. *International Society of Ecological Modellers (ISEM)*. Quebec City, Canada, Oct. 3-7, 2009.
23. *Luper D, **Schramski JR**, Kazanci C, Arabnia HR. Using Time Series and Pattern Recognition Analysis to Find Repetition and Homogeneity Buried in Complex Ecosystems. *International Society of Ecological Modellers (ISEM)*. Quebec City, Canada, Oct. 3-7, 2009.
[Mr. Luper is a Doctoral student advised by Dr. Schramski]
22. ***Schramski JR**, Gattie DK, Rutz Z, Li K, Jambeck J, Rabe J. Modeling a Trophically Balanced Thermodynamic Economy: Considerations of Energy Networks in a Fossil Energy Free Economic and Corresponding Ecological System. Poster Presentation, *International Society of Ecological Modellers (ISEM)*. Quebec City, Canada, Oct. 3-7, 2009.
21. *Kazanci C, Ma Q, Tollner EW, Matamba L, **Schramski JR**, Patten BC. Dynamic Network Analysis: Throughflow, Storage, Cycling and Indirect Effects. *International Society of Ecological Modellers (ISEM)*. Quebec City, Canada, Oct. 3-7, 2009.

20. *Luper D, **Schramski JR**, Kazanci C, Arabnia H. Repetition and Homogeneity Buried in Complex Ecosystems: Using Pattern Recognition in Ecological Network Analysis. *The International Association for Mathematics and Computers in Simulation (IMACS): Computational and Applied Mathematics & Applications in Science and Engineering*. Athens GA, August 3-5, 2009.
[Mr. Luper is a Doctoral student advised by Dr. Schramski].
19. *Tollner EW, **Schramski JR**, Kazanci C, Patten BC. Control System Approaches to Ecological Systems Analysis. *The International Association for Mathematics and Computers in Simulation (IMACS): Computational and Applied Mathematics & Applications in Science and Engineering*. Athens GA, August 3-5, 2009.
18. *Tollner EW, Kazanci C, and **Schramski JR**. Network Particle Tacking (NPT) for Ecosystem Thermodynamics and Risk Analysis. *American Society of Engineering Education*, Austin TX, June 14-17, 2009. Won first place in Biological Engineering Section, which included a \$250 award stipend.
17. ***Schramski, JR**, Tilley DR, and Carter TL. Comparative Embodied Energy Analysis to Assess Green Roof Sustainability. *International Greening Rooftops for Sustainable Communities Conference*, Atlanta GA, June 4-7, 2009.
16. ***Schramski JR**, Patten BC, Kazanci C, Gattie DK, Kellam NN. Revealing Ecosystem Energetics through the Reynolds Transport Theorem in Ecological Network Analysis. Poster Presentation. *International Ecological Network Analysis Conference*. Athens GA, April 23-25, 2008.
15. ***Schramski JR**. Form and Function—Boundaries, Intersections, and Integration of Disparate Disciplines in Ecological Network Analysis. *International Ecological Network Analysis Conference*. Athens GA, April 23-25, 2008.
14. *Verma BP and * **Schramski JR**. (co-presenters) The faculty of engineering; a self-organizing unit. *Complexity Science and Education Research Conference*. Athens GA, February 3-5, 2008.
13. ***Schramski JR**, Tilley DR, Carter TL, Rustagi N. Data collection, assumptions, and synthesis for comparative embodied energy analysis for green engineering. *International Society for the Advancement of Emergy Research (ISAER)*. Gainesville FL, January 31 – February 2, 2008.
12. *Rustagi N, Tilley DR, **Schramski JR**. Emergy analysis of living green roofs. *International Society for the Advancement of Emergy Research (ISAER)*. Gainesville FL January 31 – February 2, 2008.
11. *Gattie DK, **Schramski JR**. Environs, ascendancy, exergy and emergy: System-level properties for ecosystem analysis and the need for synthesis in ecological engineering. *AEES Annual Conference*. Manhattan KS, May 23-25, 2007.
10. *Gattie DK, **Schramski JR**, Bata SA. Ecological Network Analysis: An analytical methodology for mathematically deriving holistic ecosystem properties. *ASAE International Meeting*. Orlando FL, July 17-20, 2005.
9. *Gattie DK, **Schramski JR**, Bata SA. Analysis of microdynamic environ flows in an ecological network. *AEES Annual Meeting*. Columbus OH, May 18-20, 2005.

8. *Gattie DK, **Schramski JR**, Bata SA. Holistic analysis of ecosystem properties and complexity. *IBE Annual Meeting*. Athens GA, Mar. 4-6, 2005.
7. ***Schramski JR**, Gattie DK, Patten BC, Borrett SR, Fath BD, Thomas CR, Whipple SJ. Indirect effects and distributed control in ecosystems: Network environ analysis of a seven-compartment model of nitrogen flow in the Neuse River Estuary, USA — Steady-state analysis. *European Conference on Ecological Modelling*. Bled, Slovenia, Sept. 29-Oct. 1, 2004.
6. †**Schramski JR**, * Gattie DK, Patten BC, Borrett, SR, Bata SA, Fath BD, Whipple SJ. Indirect effects and distributed control in ecosystems: Distributed Control in the Environ Networks of a Seven-Compartment Model of Nitrogen Flow in the Neuse River Estuary, USA — Time series analysis. Poster Presentation. *European Conference on Ecological Modelling*. Bled, Slovenia, Sept. 29-Oct. 1, 2004.
5. *Borrett SR, Gattie DK, Patten BC, Whipple SJ, **Schramski JR**, Bata S. Throughflow decomposition and indicators of ecosystem complexity in Network Environ Analysis. *Ecosystem Complexity Workshop*. Bled, Slovenia, Sept. 25-26, 2004.
4. *Gattie DK, **Schramski JR**, Borrett SR, Patten BC, Whipple SJ. Network (output) environ analysis of a nitrogen flow model. *First Annual UGA Engineering Conference*. Athens GA, Oct. 28, 2004.
3. *Patten BC, Gattie DK, Whipple SJ, **Schramski JR**, Borrett SR, Turk HJ, Fath BD. Environs and network environ analysis: introduction and overview. *European Conference on Ecological Modelling*. Bled, Slovenia, Sept. 28-Oct. 1, 2004.
2. *Gattie DK, **Schramski JR**, Borrett SR, Patten BC, Turk HJ. Network environ analysis of a seven-compartment model of nitrogen flow in the Neuse River Estuary, USA: Steady-state analysis. *European Conference on Ecological Modelling*. Bled, Slovenia, Sept. 28-Oct. 1, 2004.
1. *Gattie DK, **Schramski JR**, Borrett SR, Patten BC, Turk HJ, Whipple SJ. Analysis of ecosystem as a network of environments. *AEES*. Fayetteville AR, 2004.

Interviews (4)

4. Schramski JR. Print interview for *The Tye* by Andrew Nikiforuk, The earth's battery is running low. August 10, 2015. <http://thetyee.ca/Opinion/2015/08/10/Earth-Battery-Running-Low/>
3. Schramski JR. Print interview for *Newsweek* by Douglas Main, Two numbers: humans have burned up half the world's biomass. August 5, 2015. <http://www.newsweek.com/2015/08/14/two-numbers-humans-have-burned-half-worlds-biomass-359560.html>
2. Schramski JR. Broadcast interview on Georgia Public Broadcasting, *On Second Thought*, by host Celeste Headlee concerning recent journal article in Proceedings of the National Academies, Human domination of the biosphere: rapid discharge of the earth-space battery foretells the future of humankind, July 29, 2015. <https://soundcloud.com/onsecondthought/full-show-july-29-2015#t=17:34>
1. Schramski JR. Print interview for *International Business Times* by Hannah Osborne, Humans face extinction if plant destruction continues: 'Laws of thermodynamics have

no mercy'. July 16, 2015. <http://www.ibtimes.co.uk/humans-face-extinction-if-plant-destruction-continues-laws-thermodynamics-have-no-mercy-1511026>

Conference Proceedings (9)

9. Wan J, Gattie D, Hester N, Jambeck J, Li K, **Schramski J**. 2011. Life cycle comparison of two RO concentrated reduction technologies, In: *Proceedings of the 2011 Georgia Water Resources Conference*. Athens GA, April 11-13.
8. Kazanci C, **Schramski JR**, and Tollner EW. 2011. Individual based emergy analysis: A Lagrangian model of energy memory. In: *Emergy Synthesis 6, Theory and Applications of the Emergy Methodology* (Brown M. Editor), *Proceedings of the International Society for the Advancement of Emergy Research (ISAER)*. Gainesville FL, January 14 – February 16, 2010.
7. Luper D, Kazanci C, **Schramski JR**, Arabnia HR. 2011. System Decomposition for Temporal Concept Analysis, 19th International Conference on Conceptual Structures, ICCS 2011, Derby, UK, July 25-29, 2011, Publisher: Springer, Acceptance Rate; 60%. **[Mr. Luper is a Doctoral student advised by Dr. Schramski]**
6. Luper D, Kazanci C, **Schramski JR**, Arabnia HR. 2011. Flow Decomposition in Complex Systems. IEEE Computer Society's Conference Publishing Services, ITNG 2011, 8th International Conference on Information Technology, Las Vegas NV, April 11-13, 2011. Publisher: IEEE Computer Society CPS, Acceptance Rate; 29% **[Mr. Luper is a Doctoral student advised by Dr. Schramski]**
5. Tollner EW, Kazanci C, and **Schramski JR**. 2009. Network Particle Tracking (NPT) for Ecosystem Thermodynamics and Risk Analysis. *Proceedings of the American Society of Engineering Education*, Austin TX, June 14-17, 2009. Won first place in Biological Engineering Section, which included a \$250 award stipend.
4. **Schramski, JR**, Tilley DR, and Carter TL. 2009. Comparative Emergy Analysis to Assess Green Roof Sustainability. *Proceedings of the International Greening Rooftops for Sustainable Communities Conference*, Atlanta GA, June 4-7, 2009.
3. Verma BP and **Schramski JR**. (co-presenters) 2008. The Faculty of Engineering; A Self Organizing Unit. *Proceedings of the Complexity Science and Education Research Conference*. Athens GA, February 3-5, 2008.
2. **Schramski JR**, Tilley DR, Carter TL, Rustagi N. 2008. Comparative Emergy Synthesis for Green Engineering. In: *Emergy Synthesis 5, Theory and Applications of the Emergy Methodology* (Brown M. Editor), *Proceedings of the International Society for the Advancement of Emergy Research (ISAER)*. Gainesville FL, January 31 – February 2, 2008.
1. Rustagi N, Tilley DR, **Schramski JR**. 2008. Total Energy Requirements of a Living Extensive Green Roof. In: *Emergy Synthesis 5, Theory and Applications of the Emergy Methodology* (Brown M. Editor), *Proceedings of the International Society for the Advancement of Emergy Research (ISAER)*. Gainesville FL January 31 – February 2, 2008.

General Presentations (10)

10. **Schramski JR.** 2010. If Heat Energy Were Blue..., *Lilly Fellows Workshop*, Sapelo Island GA, Center for Teaching and Learning, University of Georgia, Athens GA, April 2009.
9. **Schramski JR.** 2008. Network Innovations in Ecological Network Analysis; Invited Presentation, *Systems Ecology Student Group*. Odum School of Ecology, University of Georgia, Athens GA, March 2008.
8. **Schramski JR.** 2007. Ecological Network Analysis, Indirect Effects, and Distributed Control in a Biogeochemical Model; Invited Lecturer, *Applied Mathematics Lecture Series*. Department of Mathematics, University of Georgia, Athens GA, Nov. 2007.
7. **Schramski JR.** 2007. Comprehensive Facilities Maintenance, Invited Lecturer, *Special Topics Course: Facilities Management*. Department of Counseling and Human Development, University of Georgia, Athens GA, January 2007.
6. **Schramski JR.** and Marcotte S. (co-presenters) 2004. Custodial Consolidation, *Southeastern Association of Housing Officers*. St. Simons Island GA, February 2004.
5. **Schramski JR.** 2003. Engineering in Industry. *National Science Foundation Bridges to Engineering Summer Institute*. College of Education & Faculty of Engineering, University of Georgia, Athens GA, June 2003.
4. **Schramski JR.** 2002. An Initial Look into the Residual Stress Levels of *Quercus virginiana*, *Institute of Ecology Graduate Student Symposium*. University of Georgia, Athens GA, Jan. 2002.
3. **Schramski JR.** and Ayoob J. (co-presenters) 2001. Sprinkler Retrofits (awarded first place for quality of facilities presentations), *Southeastern Association of Housing Officers*. Nashville TN, March, 2001.
2. **Schramski JR.** 1999. Product Development Cycles in Industry, Guest Lecturer for *UGA Chapter of the American Society of Agricultural Engineers*. University of Georgia Department of Biological and Agricultural Engineering, Athens GA.
1. **Schramski JR.** 1998. The Importance and Benefits of Graduate School, Invited Lecturer, *UGA Chapter of the American Society of Agricultural Engineers*. University of Georgia Department of Biological and Agricultural Engineering, Athens GA.

Workshops & Invited Courses (17)

17. Invited lecture, Cities, the climax community of humankind, as self-organizing and evolving organisms: Theoretical and empirical evidence of their role in global sustainability in *Osher Lifelong Learning Institute at the University of Georgia*. Athens GA, January 17, 2017.
16. Invited lecture, Human domination of the biosphere: the thermodynamics of civilization. Skype lecture in *Global Sustainability*, *Appalachian State University*, Boone, NC, April 10, 2017.
15. Invited lecture, Energy balance, the biosphere, and the future of restoration ecology, lecture in *Foundations of Restoration Ecology*, University of Georgia School of Forestry, Athens GA, March 24, 2016.

14. Invited participant, *National Science Foundation, food, energy, and water whitepaper workshop*, Migration of agriculture as a path to the geographical sustainability of agriculture considering production, energy and water constraints, Boulder CO, October 21-23, 2015.
13. Invited lecture, Human domination of the biosphere: the laws of thermodynamics foretells the future of humankind. Skype lecture in *Biology of Sustainability, University of St. Thomas*, Minneapolis MN, September 29, 2015.
12. Invited participant, Synthesizing top-down and bottom-up approaches to ecological energetics, *National Center for Ecological Analysis and Synthesis*, Santa Barbara, CA, July 8-13, 2013.
11. Invited Graduate School Instructor, The Thermodynamics of Systems Ecology, *Beijing Normal University*, Beijing China, June 21-29, 2013.
10. Organizing Co-Chair and Moderator, Technical Symposium, "System Models". *European Conference on Ecological Modelling (ECEM)*. Riva del Garda, Italy, May 30 – June 2, 2011.
9. Organizing Chair and Moderator, Technical Symposium, "Ecological & Environmental Engineering – Complexity and System Issues". *Institute of Biological Engineering (IBE) Conference*. Atlanta Georgia, March 3-5, 2011.
8. Organizing Chair and Moderator, USDA supported *Energy in Sustainable Agriculture*, two-day event with 20 representatives from industry and academia, University of Georgia, Athens GA. Sept. 23-25, 2010.
7. Invited participant, *Southern SARE Regional Strategy and Planning Workshop*, Fort Valley State University, Fort Valley GA, July 27, 2010.
6. Invited participant, *Annual University of Georgia Academic Affairs Faculty Symposium*, Helen GA, March 17-19, 2010.
5. Organizing Chair and Moderator, Technical half-day Symposium, "State of the Art: Network Environ Analysis and General Ecological Network Theory". *International Society of Ecological Modellers Conference*. Quebec, Canada, Oct. 3-7, 2009.
4. Organizing Chair, *Third International Ecological Network Analysis Conference*, three-day event with 25 international scholars, University of Georgia, Athens GA. April 23-25, 2008.
3. **Schramski JR**. 2008. Energetic Networks in the Built Environment, Invited Lecturer, *College Student Ecology*. Department of Counseling and Human Development, University of Georgia, Athens GA, April 2008.
2. Co-organizer and Moderator, all ecological network analysis workshops in *First International Ecological Network Analysis Conference*, University of Georgia, Athens GA. March 1-3, 2005.

1. Invited Discussant, International Workshop – Ecosystem Complexity. Bled, Slovenia. Sept. 25-26, 2004.

PROFESSIONAL SERVICE AND SOCIETIES (14)

14. Invited Scientific Committee, Fourth International Conference on Energy Research and Technology (ICERT20). August 19-21, 2020, Prague Czech Republic.
13. Faculty Adviser, Society of Environmental Engineers, UGA student section. 2008 to 2017.
12. Invited Board Member, Student Affairs Academic Advisory Board, Sept. 2015 to present.
11. Invited Board Member and elected Treasurer, International Society for BioPhysical Economists, December 2015 to present.
10. Chair, University of Georgia undergraduate degree in environmental engineering's accreditation process through the Accreditation Board for Engineering and Technology (ABET) degree certification program. 2015. No Deficiencies found during program's inaugural audit
9. Associate Editor, *International Journal of Teaching and Learning in Higher Education*, August 2014 to Present.
8. Invited Faculty Affiliate, University of Georgia's Lilly Teaching Fellows Program. 2011 – 2018.
7. Co-Chairman for University of Georgia's Undergraduate Degree in Environmental Engineering's accreditation process through the Accreditation Board for Engineering and Technology (ABET) degree certification program. 2009 – 2011. No Deficiencies found during program's inaugural audit.
6. Invited Committee Member, Hearing Administrator, Office of Student Conduct, University of Georgia Division of Student Affairs.
5. University of Georgia Engineering Council, elected by peers to a three-year term. 2009 – 2011.
4. Invited Science and Research Committee Member for *International Society of Ecological Modellers Conference*. Quebec City, Canada, Oct. 3-7, 2009.
3. Invited Research Committee Member for *International Greening Rooftops for Sustainable Communities Conference*, Atlanta GA, June 4-7, 2009.
2. Member, International Society of Ecological Modellers (ISEM) 2009 to present and Society of Environmental Engineers and Scientists (AEES) 2015 to present.
1. Previous member, International Society for the Advancement of Energy Research (ISAER).

GRADUATE SCHOOL RESEARCH

2003 – 2006 Systems and Engineering Ecology program, University of Georgia, Athens, GA. Theoretical assessment of indirect effects in ecosystems using ecological network analysis.

Dissertation: Distributed Control in the Environ Networks of a Seven Compartment Model of Nitrogen Flow in the Neuse River Estuary, North Carolina, USA — May 2006.

1992 – 1993 Systems Dynamics Research Laboratory, University of Cincinnati, Cincinnati, OH. Modeling and mode shape assessment of system mounting structures driven by low frequency forcing functions.

Thesis: Influences of Suspension Systems on Low Frequency Modal Analysis — May 1993.

HONORS (6)

6. Awarded the 2014 Richard B. Russell Award for Excellence in Undergraduate Teaching, University of Georgia's highest teaching honor for early career faculty.
5. First Place Paper award, physical sciences category, Center for Undergraduate Research Opportunities (CURO) at the University of Georgia, 2013 CURO Conference and Symposium, Perryman M.E. and **Schramski J.R.** 2013, Embodied energy requirements for meat calorie versus non-meat calorie production: a comparative study of nine countries. **[Ms. Perryman is an undergraduate student advised by Dr. Schramski]**
4. Assistant Director, UGA Lilly Teaching Fellows Program (2012 - Present), invited position to help administer the program together with the Director, Jean Martin-Williams.
3. Lilly Teaching Fellowship. 2009-2011, \$2,000. University of Georgia Center for Teaching and Learning. Invitation to participate in advanced pedagogical research and dialog for two-year period with other fellowship recipients.
2. First Place Paper. 2008. \$250. Tollner EW, Kazanci C, and **Schramski JR.**, Network Particle Tracking (NPT) for Ecosystem Thermodynamics and Risk Analysis at American Society of Engineering Education (ASEE) conference, June 2008 won first place in Biological Engineering Section.
1. Dwight Douglas Award. 2008. University of Georgia Division of Student Affairs, for work with others in relation to University Housing's sustainability efforts.

LICENSES (2)

2. Georgia Professional Engineer, license # 021404
1. Refrigeration Service Engineers Society, license # 069400771

ACADEMIC COURSES TAUGHT (8)

University of Georgia

ENGR-ECOL 8560	Systems and Engineering Ecology
ENVE 4230/6230	Energy in Nature, Civilization, and Engineering
ENVE 3210	Energy Analysis I, Thermodynamics and the Biosphere I
ENVE 3220	Energy Analysis II, Thermodynamics and the Biosphere II
ENGR 4300	Mechanical Systems II
ENGR 4920	Senior Design
ENGR 3160	Fluid Mechanics and Fluid Mechanics Laboratory
ENVE 4980	CURO Undergraduate Research

Truett-McConnell College

College Algebra
College Preparatory Mathematics