

## **Jennifer Pontius**

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### **PROFESSIONAL EXPERIENCE:**

Research Ecologist USDA Forest Service, Northern Research Station (2004 to present)  
Research Assistant Professor University of Vermont, Rubenstein School of Environment  
and Natural Resources (2008 to present)  
Principle Investigator Vermont Monitoring Cooperative (2013 to present)  
<https://www.uvm.edu/femc/>  
Program Director Environmental Science Program (2016 to present), University of Vermont  
Rubenstein School of Environment and Natural Resources

### **EDUCATION:**

**Ph.D.** Earth and Ecosystem Sciences, 2004, University of New Hampshire  
**M.S.** Natural Resources, 1998, University of New Hampshire  
**BS** Environmental Science / Terrestrial Ecology, 1993, University of Virginia  
**BA** Spanish, 1993, University of Virginia

### **Additional Certifications**

*Certificate in Industrial Statistics, Department of Mathematics, University of New  
Hampshire, Durham, New Hampshire, May 2002*  
*Soil Scientist Certification, New Hampshire Board of Certification of Natural Scientists,  
September 1997.*

### **PUBLICATIONS**

*\*Indicates student co-authorship*

#### **Textbooks**

#### **Book Chapters**

Pontius, J. and J. Duncan. In review. Linking Science and Management in a Geospatial, Mutli-criterion Decision Support Tool. In: Advances in Forest Research. Intech. ISBN 978-953-51-5651-2.

#### **Peer Reviewed Journal Articles**

- Kosiba, A., Duncan, J., Meigs, G., Pontius, J. and W. Keeton. In review. Spatiotemporal patterns of forest disturbance in the Northeastern United States: 2000 – 2016. *Forest Ecology and Management*.
- \*Schaberg, P., Kosiba, A., Hawley, G., Rayback, S., Pontius, J., Miller, E. and B. Engel. In review. Pollutant critical load exceedance – do deposition legacies matter? *Canadian Journal of Forest Research*.
- \*Adams, A. Pontius, J. Galford, G., D. Gudex-Cross and S. Merrill. In review. Modeling carbon storage across a heterogeneous mixed temperate forest: the influence of forest type specificity on regional-scale carbon storage estimates. *Landscape Ecology*.
- Pontius, J. Cook, B. Hanavan, R and R. Hallett. (2017). High spatial resolution spectral unmixing for mapping ash species across a complex urban environment. *Remote Sensing of Environment*. 199: 360-369. DOI: 10.1016/j.rse.2017.07.027
- \*Gudex-Cross, D., Pontius, J. and Adams, A. (2017). Enhanced forest cover mapping using spectral unmixing and object-based classification of multi-temporal Landsat imagery. *Remote Sensing of Environment* 196: 193-204.
- \*Krebbs, J., Pontius, J. and P. Schaberg. (2017). Modeling the Impacts of Hemlock Woolly Adelgid on Carbon stocks in Northern New England. *Canadian Journal of Forest Research* 47: 727-734.
- \*Livingston, W., Pontius, J., Costanza, K. and S. Trosper. 2017. Spatially-explicit model for estimating locations of future hemlock growth declines associated with the hemlock woolly adelgid. *Biological Invasions* 19(5), 1577-1595. DOI: 10.1007/s10530-017-1380-x.
- Pontius, J.A., Halman, J. and Schaberg, P.G., 2016. 70 years of forest growth and community dynamics in an undisturbed northern hardwood forest. *Canadian Journal of Forest Research*, 46(7): 959-967.
- \*Engel, B.J., Schaberg, P.G., Hawley, G.J, Rayback, S.R. Pontius, J.A. Kosiba, A.M. and E.K. Miller. 2016. Assessing relationships between red spruce radial growth and pollution critical load exceedance values. *Forest Ecology and Management*, 359: 83-91.
- Hanavan, R.P., Pontius, J., Hallett, R.A. 2014. A ten year assessment of hemlock decline in the Catskill Mountain region of New York State using hyperspectral remote sensing techniques. *Environmental Entomology*, 108:1 339-349.
- Pontius, J. 2014. A new approach for forest decline assessments: Maximizing detail and accuracy with multispectral imagery. *International Journal of Remote Sensing*. 35:9, 3384-3402.
- Pontius, J. and R. Hallett. 2014. Comprehensive methods for earlier detection and monitoring of forest decline. *Forest Science. For. Sci.* 60(6):1156-1163.
- \*White, K., Pontius, J. and P. Schaberg. 2014. Remote sensing of spring phenology in northeastern forests: a comparison of methods, field metrics and the impact image availability. *Remote Sensing of Environment*: 148, 97–107
- \*Russel-Roy, E., Keaton, W., Pontius, J. 2014. Rehabilitation forestry and carbon market access on high-graded northern hardwood forests. *Canadian Journal of Forest Research*. 44: 1–13.

- Dukes, J., Pontius, J., Orwig, D., Garnas, J., Rodgers, V., Braze, N., Cooke, B., Theoharides, K., Stange, E., Harrington, R., Ehrenfeld, J., Gurevitch, J., Lerdau, M., Stinson, K., Wick, R., and M. Ayres. 2009. Responses of pests, pathogens and invasive species to climate change in the forests of Northeastern North America: What can we predict? *Canadian Journal of Forest Research*. 39(2): 231-248.
- Pontius, J., Martin, M., Plourde, L. and R. Hallett. 2008. Ash Decline Assessment in Emerald Ash Borer infested regions: a test of tree-level, hyperspectral technologies. *Remote Sensing of Environment*, 112, 5: 2665-2676.
- Pontius, J.; Hallett, R. A., and Martin, M. E. 2006. Foliar chemistry linked to hemlock woolly adelgid success and hemlock susceptibility. *Environmental Entomology* 35(1):112-120.
- Pontius, J.; Hallett, R. A., and Martin, M. E. 2005. Assessing hemlock decline using hyperspectral imagery: signature analysis, indices comparison and algorithm development. *Journal of Applied Spectroscopy*. 2005; 59 (6): 836-843.
- Pontius, J.; Martin, ME, and Hallett, RA. 2005. Using AVIRIS to assess hemlock abundance and early decline in the Catskills, New York. *Remote Sensing of Environment*. 2005; 97:163-173.

### **Technical Reports**

- Pontius, J., J. Duncan, M. Pendleton, J. Rosovsky, and C. Waite (Eds.) 2016. The Vermont Monitoring Cooperative Long-Term Monitoring Update – 2015. Available online at [http://www.uvm.edu/vmc/annual\\_report/2015](http://www.uvm.edu/vmc/annual_report/2015).
- Pontius, J., J. Duncan, M. Pendleton, J. Rosovsky, and C. Waite (Eds.) 2015. The Vermont Monitoring Cooperative Long-Term Monitoring Update – 2014. Available online at [http://www.uvm.edu/vmc/annual\\_report/2014](http://www.uvm.edu/vmc/annual_report/2014).
- Pontius, J., J. Duncan, M. Pendleton, J. Rosovsky, and C. Waite. 2014. Vermont Monitoring Cooperative Strategic Plan 2015-2020. Vermont Monitoring Cooperative. Available online at [http://www.uvm.edu/vmc/documents/2014\\_VMC\\_Strategic\\_Plan\\_Final\\_Complete.pdf](http://www.uvm.edu/vmc/documents/2014_VMC_Strategic_Plan_Final_Complete.pdf)
- Pontius, J., J. Duncan, M. Pendleton, J. Rosovsky, and C. Waite (Eds.) 2014. The Vermont Monitoring Cooperative Long-Term Monitoring Update – 2013. Available online at [http://www.uvm.edu/vmc/annual\\_report/2013](http://www.uvm.edu/vmc/annual_report/2013).
- Hallett, R., Martin, M., Plourde, L., Pontius, J., Siemion, J., Murdoch, P. 2010. Assessment of regional forest health and stream and soil chemistry using a multi-scale approach and new methods of remote sensing interpretation in the Catskill Mountains of New York. Technical Report 10-28. Albany, NY: NYSERDA. pg: 1-33. <https://www.sciencebase.gov/catalog/item/55c9f580e4b08400b1fdb74f>
- Pontius, Jennifer; Hallett, Richard; Martin, Mary; Plourde, Lucie. 2010. A Landscape Scale GIS Tool to Assess Eastern Hemlock Susceptibility to Hemlock Woolly Adelgid Infestation. In: Pye, J.M.; Rauscher, H.M.; Sands, Y.; Lee, D.C.; Beatty, J.S., eds. *Advances in Threat Assessment and their Application to Forest and Rangeland Management*. Gen. Tech. Rep. PNW-GTR-802. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest and Southern Research Stations. Pp 657-672. [https://www.fs.fed.us/pnw/pubs/pnw\\_gtr802/pnw\\_gtr802a.pdf](https://www.fs.fed.us/pnw/pubs/pnw_gtr802/pnw_gtr802a.pdf)

\*Contosta, A.; Hallett, R., and Pontius, J. 2005. A New Image for the Forest: Using Hyperspectral Remote Sensing to Map Forest Health. In: Forest Matters 8(1): p. 9. USDA Forest Service; Morgantown, WV.  
[https://www.na.fs.fed.us/stewardship/newsltr/newsletter/05spring\\_stewardship.pdf](https://www.na.fs.fed.us/stewardship/newsltr/newsletter/05spring_stewardship.pdf)

## **Editorial Products**

Pontius, J., Schaberg, P. and J. Duncan (Eds.) 2017. Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 121. doi:10.18125/D2MW2X. Available online at <https://www.uvm.edu/femc/ecanusa2016#proceedings>

Pontius, J., M. Pendleton, J. Rosovsky, J. Truong and J. Duncan (Eds.) 2017. Healthy Forests, Healthy Watersheds. Proceedings of the December 02, 2016 Vermont Monitoring Cooperative Conference: Burlington, VT, Vermont Monitoring Cooperative. <https://doi.org/10.18125/D2RP4V>. Available online at <http://www.uvm.edu/vmc/annualMeeting/2016/proceedings>.

Pontius, J., M. Pendleton, J. Rosovsky, J. Duncan, and C. Waite (Eds.) 2016. 25 Years of Forest Ecosystem Monitoring: Trends, Patterns and Lessons Learned. Proceedings of the December 11, 2015 Vermont Monitoring Cooperative Conference: Burlington, VT, Vermont Monitoring Cooperative. Available online at <http://www.uvm.edu/vmc/annualMeeting/2015/proceedings>.

Pontius, J., J. Duncan, M. Pendleton, J. Rosovsky, and C. Waite (Eds.) 2015. Proceedings of the December 12, 2014 Vermont Monitoring Cooperative Conference: New Collaborations for Emerging Forest Needs. Burlington, VT, Vermont Monitoring Cooperative. Available online at <http://www.uvm.edu/vmc/annualMeeting/2014/proceedings>.

Pontius, J., J. Duncan, M. Pendleton, J. Rosovsky, and C. Waite (Eds.) 2014. Proceedings of the December 12, 2013 Vermont Monitoring Cooperative Conference. Burlington, VT, Vermont Monitoring Cooperative. Available online at <http://www.uvm.edu/vmc/annualMeeting/2013/proceedings.php>.

## **Popular Articles**



### **Record Pollution Levels Leave Many Gasping for Air**

Posted on March 28, 2017 by Jennifer Pontius

Reports of poor air quality in China and India have become a common reminder that human exposure...

SciTech Connect. <http://scitechconnect.elsevier.com/mediterranean-at-risk/>



### **The Mediterranean at Risk**

Posted on May 26, 2017 by Jennifer Pontius

In the news: As we celebrate World Oceans Day on June 8, we are again reminded of the many...

SciTech Connect. <http://scitechconnect.elsevier.com/mediterranean-at-risk/>

## **Published Abstracts**

- \*Pontius, J., Krebbs, J., Schaberg, P., Livingston, W., Costanza K. and S. Trosper. 2017. Modeling hemlock woolly adelgid risk and impacts of presalvage harvesting on carbon stocks in northern hemlock forests. In: Proceedings Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT. p 17.
- \*Gudex-Cross, D. and J. Pontius. 2017. Changing tree species distributions: a 30 year investigation into spatiotemporal trends. In: Proceedings Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT. p 36.
- \*Adams, A., Pontius, J., Galford, G. Merrill, S. and D. Gudex-Cross. 2017. 30 years of forest conversion in the Northeast: historical patterns and future projections. In: Proceedings Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT. p 23.
- \*Pontius, J., Rayback, S., Tait, E., Little, J., and J. Kilbride. 2017. Landscape scale assessments of forest productivity: methods, patterns and trends. In: Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. Pontius, J., Schaberg, P. and J. Duncan (Eds.) September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 89-90.
- Pontius, J., Oswald, E., Wilmot, S., Rayback, S., and P. Schaberg. 2017. The complex relationship between climate and sugar maple health: climate change implications for a key northern hardwood species. In: Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. Pontius, J., Schaberg, P. and J. Duncan (Eds.) September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 87-88.
- \*Pontius, J., Krebbs, J., Schaberg, P., Livingston, W., Costanza K. and S. Trosper. 2017. Modeling hemlock woolly adelgid risk and impacts of presalvage harvesting on carbon stocks in northern hemlock forests. In: Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. Pontius, J., Schaberg, P. and J. Duncan (Eds.) September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 91-94.
- \*Gudex-Cross, D., Pontius, J., and A. Adams. 2017. Enhanced forest cover mapping using spectral unmixing and object-based classification of multitemporal Landsat imagery. In: Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. Pontius, J., Schaberg, P. and J. Duncan (Eds.) September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 46-47.
- \*Adams, A., Pontius, J., Galford, G. and D. Gudex-Cross. 2017. 30 years of forest conversion in the Northeast: historical patterns and future projections. In: Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. Pontius, J., Schaberg, P. and J. Duncan (Eds.) September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 18.
- Pardo, L., Robin Abbott, M., and J. Pontius. 2017. Assessing spatial patterns of the effects of nitrogen deposition on forests using a GIS management tool for critical loads and

- exceedance. In: Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. Pontius, J., Schaberg, P. and J. Duncan (Eds.) September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 86.
- Robin-Abbott, M., Pardo, L., and J. Pontius. 2017. Comparison of critical loads of nitrogen for forest species and communities in Class I areas of the Northeastern United States. In: Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. Pontius, J., Schaberg, P. and J. Duncan (Eds.) September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 98.
- Duncan, J. and J. Pontius. 2017. Introducing a multi-criteria decision support tool for managing forests under climate change. In: Proceedings of the 8th Eastern CANUSA Forest Science Conference: Understanding and Managing ECANUSA Forests in a Changing Environment. Pontius, J., Schaberg, P. and J. Duncan (Eds.) September 30-October 1, 2016. Burlington, VT. Forest Ecosystem Monitoring Cooperative. pp 32.
- Duncan, J., Carr, K., Gurvich, D. Rossell, R. Truong, J., and J. Pontius. 2017. Continued expansion of the Vermont Monitoring Cooperative forest health monitoring network. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference. December 11, 2015. Burlington, VT. p 31.
- Pontius, J. 2016. Exploring a Forest Indicators Dashboard. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference. December 11, 2015. Burlington, VT. p XX
- Pontius, J. 2016. The role of climate in sugar maple health: projections for the future. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference. December 11, 2015. Burlington, VT. p XX
- \*Adams, A, Pontius, J., Galford, G., and D. Gudex-Cross. 2016. Calculating carbon storage in the Northern Forest: a methods comparison. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference. December 11, 2015. Burlington, VT. p XX
- \*Gudex-Cross, D., Pontius, J. and A. Adams. 2016. A Novel Approach to Mapping Forest Cover in Vermont: Coupling Spectral Unmixing and Object-based Classification of Multitemporal Landsat TM Imagery. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference. December 11, 2015. Burlington, VT. p XX
- Pontius, J.A. 2015. Integrated Forest Ecosystem Assessment to Support Sustainable Management Decisions in a Changing Climate. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference. December 11, 2014. Burlington, VT. p XX
- Pontius, J.A. Halman, J. and Schaberg, P. 2015. A long-term examination of changing species assemblages in a northern hardwood forest. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference. December 11, 2014. Burlington, VT. p XX
- Pontius, J.A. and Hallet, R.A. 2015. Summarizing multiple variables for comprehensive assessment of forest characteristics. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference. December 11, 2014. Burlington, VT. p XX
- \*Pontius, J. White, K and Schaberg, P. 2014. Remote Sensing of Spring Phenology: a twenty year assessment of trends and patterns. In: Proceedings of the Vermont Monitoring Cooperative Annual Conference, December 16, 2013. Burlington, VT. p XX

- Hallett, R., Pontius, J., Martin, M., and L. Plourde. 2008. The practical utility of hyperspectral remote sensing for early EAB detection. In: Emerald Ash Borer Research and Development Meeting; October 24-25, 2007; Pittsburg, PA. Morgantown, WV: Forest Health Technology Enterprise Team: 67-68.
- Hallett, R., Pontius, J., Martin, M., and L. Plourde. 2008. Evaluating the practical utility of hyperspectral remote sensing imagery: An EAB case study. In: Proceedings 18<sup>th</sup> USDA Interagency Research Forum on Invasive Species; January 9-12, 2007 Annapolis, MD; USDA GTR NR-P-28 pp: 33-35.
- Pontius, J.A., Hallett, R., Martin, M., and Plourde, L. 2008. Mapping ash and incipient EAB infestation using remote sensing technology. Proceedings of the Emerald Ash Borer Research and Development Meeting 2007. GTR FHTET-2008-07. USDA Forest Health Technology Enterprise Team. Morgantown, WV. P 66.
- Hallett, R. A. and Pontius, J. A. 2005. Operational Use of Hyperspectral Imagery for Forest Health Mapping. pp. 87-96 In: Onken, B. and Reardon, R. (eds.), Proceedings of the Third Symposium on Hemlock Woolly Adelgid in the Eastern United States, 2005 Feb 1-3, Asheville, North Carolina. USDA Forest Service, Morgantown, West Virginia. FHTET 2005-01.
- Pontius, J.H., Hallett, R.A., Martin, M.E. 2002. Examining the Role of Foliar Chemistry in Hemlock Woolly Adelgid Infestation and Hemlock Decline. In: Proceedings: Hemlock Woolly Adelgid Symposium. USDA Forest Service, Morgantown, WV. pp. 86-99.

## PRESENTATIONS

*\*Indicates student co-authorship*

- Pardo, L., Robin-Abbott, M., O’Dea, C.B., Pontius, J. and J. Coombs. 2017. Effects of climate, site and soil characteristics on critical loads and exceedance in forests in the northeastern U.S. National Atmospheric Deposition Program Meeting. October 30-November 3, 2017, San Diego, CA.
- Pontius, J. and J. Duncan. 2017 Linking Science and Management in an Interactive Geospatial, Mutli-Criterion, Structured Decision Support Framework: Use Case Studies of the “Future Forests Geo-visualization and Decision Support Tool”. American Geophysical Union Meeting. December 11-15, 2017. New Orleans, LA.
- \* Adams, A., Pontius, J. and Gudex-Cross, D.. 2017. Modeling carbon storage across a heterogeneous mixed temperate forest: the influence of forest type specificity on regional-scale carbon storage estimates. American Geophysical Union Meeting. December 11-15, 2016. New Orleans, LA.
- \*Gudex-Cross, D., Pontius, J. and A. Adams. 2017. Recent Changes in Tree Species Abundance: Patterns, Trends and Drivers Across Northeastern US Forests. American Geophysical Union Meeting. December 11-15, 2016. New Orleans, LA.
- \*Schaberg, P., Rayback, S., Hansen, C., Murakami, P. Duncan, J., Kosiba, A., Stern, R., Hawley, G., Pontius, J. 2017. Expanding a dendroecology database to better understand tree

- growth at Hubbard Brook and beyond. Hubbard Brook Ecosystem Study Cooperators Meeting. July 13, 2017. Woodstock, NH.
- \*Rayback, S., Kilbride, J., Pontius, J., Tait, E., and J. Little. 2016. Climate drivers of blue intensity in two temperate eastern North American conifers. American Geophysical Union Meeting. December 12-16, 2016. San Francisco, CA.
- \*Pontius, J., Krebbs, J., Schaberg, P., Livingston, W., Costanza K. and S. Trosper. 2016. Pontius, J. 2015. Modeling hemlock woolly adelgid risk and impacts of presalvage harvesting on carbon stocks in northern hemlock forests. Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT.
- Pardo, L., Robin-Abbott, M., O’Dea, C.B., Pontius, J. and J. Coombs. 2016. Identifying species at risk from nitrogen deposition in forests in the northeastern U.S.: a geospatial analysis using exceedance of critical loads. . Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT.
- \*Gudex-Cross, D. and J. Pontius. 2016. Changing tree species distributions: a 30 year investigation into spatiotemporal trends.. Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT.
- \*Adams, A., Pontius, J., Galford, G. Merrill, S. and D. Gudex-Cross. 2016. 30 years of forest conversion in the Northeast: historical patterns and future projections. . Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT.
- Pardo, L. and J. Pontius. 2016. A new GIS tool for assessing forest risk from nitrogen deposition and climate change: hands-on workshop (Workshop). Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT.
- \*Pontius, J., Rayback, S., Tait, E., Little, J., and J. Kilbride. 2016. Landscape scale assessments of forest productivity: methods, patterns and trends. Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT.
- \*Gudex-Cross, D., Pontius, J., and A. Adams. 2016. Mapping Tree Species across Northern New York and Vermont using Spectral Unmixing of Multi-temporal Landsat Imagery. Vermont Monitoring Cooperative Annual Meeting. December 9, 2016. Burlington, VT.
- \*Pontius, J., Rayback, S., Tait, E., Little, J., and J. Kilbride. 2016. Landscape scale assessments of forest productivity: methods, patterns and trends. ECANUSA Forest Science Meeting. September 30 – October 1, 2016. Burlington, VT.
- Pontius, J., Oswald, E., Wilmot, S., Rayback, S., and P. Schaberg. 2016. The complex relationship between climate and sugar maple health: climate change implications for a key northern hardwood species. ECANUSA Forest Science Meeting. September 30 – October 1, 2016. Burlington, VT.
- \*Pontius, J., Krebbs, J., Schaberg, P., Livingston, W., Costanza K. and S. Trosper. 2016. Modeling hemlock woolly adelgid risk and impacts of presalvage harvesting on carbon stocks in northern hemlock forests. ECANUSA Forest Science Meeting. September 30 – October 1, 2016. Burlington, VT.
- \*Gudex-Cross, D., Pontius, J., and A. Adams. 2016. Enhanced forest cover mapping using spectral unmixing and object-based classification of multitemporal Landsat imagery. ECANUSA Forest Science Meeting. September 30 – October 1, 2016. Burlington, VT.



- \*Adams, A., Pontius, J., Galford, G. and D. Gudex-Cross. 2016. 30 years of forest conversion in the Northeast: historical patterns and future projections. ECANUSA Forest Science Meeting. September 30 – October 1, 2016. Burlington, VT.
- Pardo, L., Robin Abbott, M., and J. Pontius. 2016. Assessing spatial patterns of the effects of nitrogen deposition on forests using a GIS management tool for critical loads and exceedance. ECANUSA Forest Science Meeting. September 30 – October 1, 2016. Burlington, VT.
- Robin-Abbott, M., Pardo, L., and J. Pontius. 2016. Comparison of critical loads of nitrogen for forest species and communities in Class I areas of the Northeastern United States. ECANUSA Forest Science Meeting. September 30 – October 1, 2016. Burlington, VT.
- Duncan, J. and J. Pontius. 2016. Introducing a multi-criteria decision support tool for managing forests under climate change. . ECANUSA Forest Science Meeting. September 30 – October 1, 2016. Burlington, VT.
- Hanavan, R., Cook, B., Hallett, R. and J Pontius. 2016. Enhanced early detection tools using remote sensing and GIS data fusion techniques. International Congress of Entomology. September 25-30, 2016. Orlando, Florida.
- Pontius, J., Oswald, E., Dupigny-Giroux, L., Rayback, S., Schaberg, P. and S. Wilmot. 2016. The complex relationship between climate and sugar maple health: Climate change implications for a key northern hardwood species. Ecological Society of America Annual Meeting. August 7-12, 2016. Ft. Lauderdale, FL.
- \*Tait, E., Little, Kilbride, J., J., Pontius, J., and S. Rayback. 2016. Predicting forest productivity across heterogeneous landscapes. Ecological Society of America Annual Meeting. August 7-12, 2016. Ft. Lauderdale, FL.
- \*Gudex-Cross, D., Pontius, J. and A. Adams. 2016. Mapping forest cover across the Northern Forest: Integrating pixel-based and object-based classification of multitemporal Landsat imagery. Ecological Society of America Annual Meeting. August 7-12, 2016. Ft. Lauderdale, FL.
- \*Little, J., Pontius, J., Rayback, S. Tait, E., and J. Kilbride. 2016. Modeling forest productivity across a heterogeneous landscape: A comparison of satellite, geospatial, and climate predictors. Ecological Society of America Annual Meeting. August 7-12, 2016. Ft. Lauderdale, FL.
- \*Adams, A., Pontius, J. and G. Galford. 2016. 30 years of forest conversion in the Northeast: historical patterns and future projections. US- International Association of Landscape Ecologists Meeting (presentation). April 3-7, 2016. Ashville, NC.
- Pontius, J. 2016. Sugar maple health, trends, patterns and climate change implications. VT Forest Health Meeting (Invited Presentation). March 31, 2016. Woodstock, VT.
- \*Adams, A., Pontius, J. and G. Galford. 2016. Calculating carbon stored in a northeastern forest: a methods comparison. Earth Science Information Partners Winter Meeting, January 2016.
- Pontius, J. Exploring a Forest Indicators Dashboard. (Workshop). Vermont Monitoring Cooperative Annual Meeting. December 11, 2015. Burlington, VT.
- Pontius, J. 2015. The role of climate in sugar maple health: projections for the future.. Vermont Monitoring Cooperative Annual Meeting. December 11, 2015. Burlington, VT.

- \*Adams, A, Pontius, J., Galford, G., and D. Gudex-Cross. 2015. Calculating carbon storage in the Northern Forest: a methods comparison. Vermont Monitoring Cooperative Annual Meeting. December 11, 2015. Burlington, VT.
- \*Gudex-Cross, D., Pontius, J. and A. Adams 2015. A Novel Approach to Mapping Forest Cover in Vermont: Coupling Spectral Unmixing and Object-based Classification of Multitemporal Landsat TM Imagery Vermont Monitoring Cooperative Annual Meeting. December 11, 2015. Burlington, VT.
- Robin-Abbott, M., Pardo, L.H., Pontius, J. and C. O'Dea. 2015. Abiotic Modifying Factors of Critical Loads of Nitrogen: Critical load ranges for Class I Areas in the Northeastern United States. Acid Rain Conference, Rochester, NY. October 19-23, 2015
- Hallett, R., Pontius, J, Cook, B and R. Hanavan. Urban Remote Sensing: Using NASA Goddard's LiDAR, Hyperspectral & Thermal Imager to map Ash and detect the effects of emerald ash borer (EAB), *Agrilus plannipenis*, in Bowie, MD. Baltimore Urban Waters Federal Partnership Project Quarterly Meeting September 8, 2015.
- \*Adams, A., Galford, G. and J. Pontius. 2015. Accounting for tree species composition in landscape-scale forest carbon storage estimates. Ecological Society of America Conference. August 9-14, 2015. Baltimore MD.
- Duncan, J. and J. Pontius. 2015. An integrated database for forest health monitoring. New England Society of American Foresters. March 24-27, 2015. Lake Fairlee, VT.
- Pontius, J.A. 2014. Integrated Forest Ecosystem Assessment to Support Sustainable Management Decisions in a Changing Climate. (Workshop) Vermont Monitoring Cooperative Annual Meeting. December 11, 2014. Burlington, VT.
- Pontius, J.A. Halman, J. and Schaberg, P. 2014. A long-term examination of changing species assemblages in a northern hardwood forest. Vermont Monitoring Cooperative Annual Meeting. December 11, 2014. Burlington, VT.
- Pontius, J.A. and Hallet, R.A. 2014. Summarizing multiple variables for comprehensive assessment of forest characteristics. Vermont Monitoring Cooperative Annual Meeting. December 11, 2014. Burlington, VT.
- Hanavan, R, Cook, B., Corp, L., Pontius, J. and Hallett, R. 2014. Data fusion techniques in pest detection: Using NASA Goddard's LiDAR, Hyperspectral & Thermal Imager to detect the emerald ash borer, *Agrilus plannipenis*, in New England. Entomological Society of America Annual Meeting. November 16-19, 2014. Portland OR.
- Robin-Abbott M, Pardo LH, Pontius JA, O'Dea CB. 2014. The effect of abiotic modifying factors on critical loads of nitrogen: species-specific tables. National Atmospheric Deposition Program Meeting. October 21-24, 2014, Indianapolis, IN.
- Pardo LH, Robin-Abbott M, Pontius JA, O'Dea CB. 2014. A management tool for setting critical loads for forest health considering interactions of climate change and nitrogen deposition. National Atmospheric Deposition Program Meeting. October 21-24, 2014, Indianapolis, IN.
- Pontius, J.A. Halman, J. and Schaberg, P. 2014. A long-term examination of changing species assemblages in a northern hardwood forest. ECANUSA Conference. October 17, 2014. Rimouski, Canada.

- Pontius, J.A. and Hallet, R.A. 2014. Summarizing multiple variables for comprehensive assessment of forest characteristics. ECANUSA Conference. October 17, 2014. Rimouski, Canada.
- Pontius, J. 2014. Climate Change and Vegetation Phenology III: Using Satellites to Identify Trends. (Workshop) SWAC Summer Institute. July 16, 2014. Burlington, VT.
- Pontius, J. 2014. The role of long-term monitoring in sustainable management of the forest resource: ongoing collections and recent findings. National Foresters Guild Meeting. June 19, 2014, Proctor Maple Research Center, Underhill, VT.
- Pontius, J. 2014. A research statistics primer. (Workshop) UVM REU Summer Program. June 18, 2014. Burlington, VT.
- Pontius J. 2014. Integrated Forest Research at the Rubenstein School. RSENR Board of Advisors Meeting. May 2, 2014. Burlington, VT.
- Pontius, J. 2014. Satellites, trees and trends: spatial tools for monitoring forested landscapes. NSRC Webinar. April 30, 2014. Burlington, VT.
- Pontius J. 2014. The role of the Vermont Monitoring Cooperative in building stronger collaborations across organizations. April 28, 2014. VT Forest Parks and Recreation State and Private Forestry Review Meeting. Montpelier VT.
- \*Pontius, J. White, K and Schaeberg, P. 2013. Remote Sensing of Spring Phenology: a twenty year assessment of trends and patterns. Vermont Monitoring Cooperative Conference, December 16, 2013. Burlington, VT.
- Hanavan, R., Hallett, R. and Pontius, J. 2013. Hyperspectral Remote Sensing Techniques to Assess a Decade of Hemlock Mortality in the Catskills Mountains. The Entomological Society of America and The Conference Exchange. November 10-13, 2013. Austin, TX.
- Pontius, J. 2013. Climate Change and Vegetation Phenology II: Online Resources for Phenological Monitoring. (Workshop) SWAC Summer Institute. July 16, 2013. Burlington, VT.
- \*Pontius, J. White, K. Remote Sensing of Spring Phenology: spatial and temporal patterns. Northeastern Ecosystem Research Cooperative Conference, March 19-20, 2013. Saratoga Springs, NY.
- Hanavan, R., Hallett, R. and Pontius, J. 2013. Hyperspectral Remote Sensing Techniques to Assess a Decade of Hemlock Decline in the Catskills Mountains. 24th USDA Interagency Research Forum on Invasive Species. Jan 8-11, 2013, Annapolis MD.
- Pontius, J., Martin. M. 2012. Remote Sensing of Canopy Condition Across the Northeast: Trends and patterns 1984-2009. Eastern CANUSA Forest Science Conference. November 1-3, 2012. Durham, NH.
- \*Keeton, W. Russell, Roy, E. Pontius, J. and Kerchner, C. 2012. Prospects for rehabilitation forestry through carbon market participation on over-harvested former industrial northern hardwood forests. Eastern CANUSA Forest Science Conference. November 1-3, 2012. Durham, NH.
- Pontius, J. and Martin, M. 2012. Quantifying forest health trends across time and space: a hyperspectral approach using multi-spectral imagery. Ecological Society of America Conference, August 7, 2012, Portland, OR.

- \*Russell-Roy, E.T., Keeton, W.S., Pontius, J. and C. Kerchner. 2012. Rehabilitation forestry and carbon market access on overharvested, former industrial northern hardwood-conifer forests. Ecological Society of America Conference, August 7, 2012, Portland, OR.
- \*Weverka, A. and J. Pontius. 2012. Remote sensing of productivity in northeastern forests. Ecological Society of America Conference, August 10, 2012, Portland, OR..
- \*White, K. and J. Pontius. 2012. Remote sensing of spring phenology: Method development and temporal trends for northeastern forests. Ecological Society of America Conference, August 10, 2012, Portland, OR..
- Pontius, J. 2012. Climate Change and Vegetation Phenology I: Photo metrics for phenological monitoring. (Workshop) SWAC Summer Institute. July 16, 2012. Burlington, VT.
- Pontius, J., and Brissette, J. 2011. Increasing growth rates at the Bartlett Experimental Forest. Northern Forests Research Symposium, November 29 2011, Burlington, VT.
- \*Pontius, J., Olson, M., White, K., W. Young and E. Reagan. 2011. Remote Sensing of Canopy Condition Trends in Northern VT: 1984-2009. Vermont Monitoring Cooperative 2011 Annual Meeting, October 31, 2011, Burlington, VT.
- Pontius, J and contributing Scientists to the VMC Online Database. 2011. Student Data Mining: a VMC Database Exploration. Vermont Monitoring Cooperative 2011 Annual Meeting, October 31, 2011, Burlington, VT.
- Pontius, J. 2011. Climate Change and Vegetation Phenology: Picture Post for Phenological Monitoring. (Workshop) SWAC Summer Institute. July 16, 2011. Burlington, VT.
- Lepine, L., Martin, M., Hallett, R., and J. Pontius. 2010. Forest Tree Species Maps from Hyperspectral Remote Sensing Imagery: Is it worth the effort? US Forest Service Hyperspectral Symposium, January 19-20, 2010, Salt Lake City, UT.
- Pontius, J. Hallett, R., Martin, M., and Lepine, L. 2010. Beyond Classification: Hyperspectral Remote Sensing for Detailed Forest Health Mapping. US Forest Service Hyperspectral Symposium, January 19-20, 2010, Salt Lake City, UT.
- Pontius, J. and Martin, M. Remote Sensing of Forest Health Trends in the northeastern United States. Northeastern Ecosystem Research Cooperative Conference, November 8-10, 2010, Saratoga Springs, NY.
- Pontius, J. and Hallett, R. Data Overload: Modeling Ecosystem Sensitivity in the Catskills of NY. VT GIS Conference 2010, July 22, 201, Burlington, VT
- Hallet, R., Pontius, J., Martin, M., and L. Lepine. 2010. Applications of Hyperspectral Remote Sensing for Urban Tree Canopy Monitoring. Million Trees NYC, Green Infrastructure, and Urban Ecology: A Research Symposium, March 5- 6, 2010, New York, NY.
- Lepine, L., Ollinger, S., Martin, M., Anderson, Pontius, J. and R. Hallett. 2010. Tree Species Mapping with Spectral Mixture Analysis: Applications for Moderate- and Fine-Scale Spatial Resolution Imagery. US Forest Service Hyperspectral Symposium, Salt Lake City, UT. January 19-20, 2010
- Pontius, J., Hallet, R., Martin, M., and L. Lepine. 2010. Using AVIRIS to Assess Hemlock Woolly Adelgid Induced Decline and Susceptibility. US Forest Service Hyperspectral Symposium, Salt Lake City, UT. January 19-20, 2010

- Hallett, R. Murdoch, P., Pontius, J., Martin, M. and L. Lepine. 2009. Regional Forest Health and Stream and Soil Chemistry Using a Multi-Scale Approach and New Methods of Remote Sensing Interpretation, Catskills Mountains, NY. Environmental Monitoring, Evaluation and Protection in NY, Linking Science and Policy Meeting. Albany, NY, October 14-15, 2009.
- Pontius, J.A. Remote Sensing as a Tool for Invasive Species Management. Conference of the Northeastern Ecosystem Research Cooperative (NERC). November 12-13, 2008. Durham, NH.
- Rogers, V., Dukes, J. and Pontius, J. Climate change and invasive species. Northern Forest Alliance Climate Change Conference. November 1-2, 2008. Hanover, NH.
- Rustad, L., Campbell, J., Cox, R., DeBlois, M., Dukes, J., Huntington, T., Magill, A., Mohan, J., Rodenhouse, N., Pontius, J., Richardson, A., Watson, M. and N. Willard. 2008. NE Forests 2100: Understanding the Impacts of Climate Change on Northeastern North American Forest Ecosystems. Conference of the Northeastern Ecosystem Research Cooperative (NERC). Durham, NH. November 12-13, 2008.
- Rustad, L., Campbell, J., Cox, R., DeBlois, M., Dukes, J., Huntington, T., Magill, A., Mohan, J., Rodenhouse, N., Pontius, J., Richardson, A., Watson, M. and N. Willard. 2008. NE Forests 2100: Understanding the Impacts of Climate Change on Northeastern North American Forest Ecosystems. SSSA Joint Annual Meeting. Houston, Texas. October 5, 2008.
- Plourde, L.C., Pontius, J.H., Ollinger, S.V., Martin, M.E., and R. A. Hallett. 2008. Tree species mapping with spectral mixture analysis: Applications for moderate- and fine-scale spatial resolution imagery. NASA Carbon Cycle & Ecosystems Joint Science Workshop. Adelphi, Maryland. April 28, 2008.
- \*Trosper, S., W.H. Livingston, and J. Pontius. 2008. Modeling Hemlock Vulnerability To Hemlock Woolly Adelgid (*Adelges tsugae* Annand) Using Radial Growth Trends. Northeast Forest Pest Council, Gerald N. Lanier Graduate Student Forum, Saratoga Spring, New York, March 18, 2008.
- Pontius, J.A., Martin, M., Plourde, L. and Hallett, R. Beyond the naked eye: What hyperspectral instruments can tell you that you might be missing. 2007 Annual Gypsy Moth Review. Shepherdstown, West Virginia. Oct. 29 - Nov. 1, 2007.
- Pontius, J.A., Hallett, R., Martin, M., and Plourde, L. Mapping ash and incipient EAB infestation using remote sensing technology. Emerald Ash Borer Research and Development Meeting. Pittsburg, Pennsylvania. October 23 & 24, 2007.
- Hallett, R., Pontius, J.A., Martin, M., and Plourde, L. The practical utility of hyperspectral remote sensing for early EAB detection. Emerald Ash Borer Research and Development Meeting. Pittsburg, Pennsylvania. October 23 & 24, 2007.
- Pontius, J.A. and Martin, M.E. High Resolution / Hyperspectral Remote Sensing. What is in a Pixel?: A Remote Sensing Symposium. University of New Hampshire, Durham, New Hampshire. September 11, 2007.
- Pontius, J.A., Dukes, J. and Rustad, L. Climate change impacts on northeaster forests: an Insect pest case study. 14th Annual Conference on the Adirondacks. Tupper Lake, New York. May 22-24, 2007.

- \*DeMaio, S., Livingston, W., Pontius, J., Kennefic, L. 2007. Site Factors Affecting Eastern Hemlock Response to Drought at the Northern Extent of Hemlock Woolly Adelgid Infestation. Northeast Forest Pest Council Meeting. Fairlee, Vermont. March 20-23, 2007.
- Hallett, R., Pontius, J., Martin, M., and L. Plourde. 2007. Evaluating the practical utility of hyperspectral remote sensing imagery: An EAB case study. 18th USDA Interagency Research Forum on Invasive Species. Annapolis, Maryland. January 9-12, 2007.
- Pontius, J., Hallett, R., Martin, M., and L. Plourde. 2006. A Landscape Scale GIS Tool to Assess Eastern Hemlock Susceptibility to Hemlock Woolly Adelgid Infestation. Advances in Threat Assessment Conference Proceedings. Boulder, Colorado. July 17– 21, 2006.
- Pontius, J.A., Hallett, R., Martin, M. and Plourde, L. New Ways Remote Sensing Can Help Manage Forest Insect Pests. The North American Forest Insect Work Conference. Asheville, NC. February 5-8, 2006.
- Pontius, J.A., Hallett, R.A. and Bailey, S.W. 2005. Using Foliar Chemistry to Assess Hemlock Susceptibility to Hemlock Woolly Adelgid, University of Maine Department of Forestry. Orono, Maine. April 7, 2005.
- Pontius, J.A., Hallett, R.A. and Bailey, S.W. 2005. A Foliar Chemistry and Remote Sensing Approach to Hemlock Woolly Adelgid Risk Assessment. George Write Society Conference, Philadelphia, Pennsylvania, March 14-18, 2005.
- Pontius, J.A., Martin, M.E. and Hallett, R.A. February 5, 2005. Using Hyperspectral Technologies to Assess Pre-Visual Hemlock Decline. 2005 Hemlock Woolly Adelgid Symposium. Charlotte, North Carolina. February 5, 2005.
- Hallett, R.A., Pontius, J.A., and Martin, M.E. 2005. Operational Use of Hyperspectral Imagery for Forest Health Mapping. Hemlock Woolly Adelgid Symposium. Charlotte, North Carolina. February 5, 2005.
- Pontius, J.A., R.A. Hallett, M.E. Martin and L.C. Plourde. 2005. Using AVIRIS to Assess Hemlock Woolly Adelgid Induced Decline and Susceptibility. 14th JPL Airborne Geoscience Workshop, Pasadena, California. May 25-27, 2005.
- Plourde, L.C., J.A. Pontius, S.V. Ollinger, M.E. Martin, J.E. Anderson, M-L Smith, 2005. Using spectral mixture analysis to discriminate tree species and health in northern temperate forests. 14th JPL Airborne Geoscience Workshop, Pasadena, California. May 25-27, 2005.
- Pontius, J.A., Hallett, R.A., Martin, M.E. 2003. Assessing Hemlock Woolly Adelgid Infestation, Hemlock Health and Susceptibility Using Hyperspectral Technologies. Forest Watch Workshop, Durham, New Hampshire, December 10, 2003.
- Smith, M.L., Plourde, L., Pontius, J.A. 2003. More than Meets the Eye: Hyperspectral Remote Sensing for Forest Monitoring. Forest Service Geospatial 2003: Putting Geospatial Information to Work, Colorado Springs, Colorado, April 7-11, 2003.
- Pontius, J.A., Hallett, R.A., Martin, M.E. 2002. Foliar chemistry and Hemlock Woolly Adelgid Infestation Patterns. Hemlock Woolly Adelgid Symposium, New Brunswick, New Jersey, February 5, 2002.

- Pontius, J.A., Hallett, R.A., Martin, M.E. 2002. What drives patterns in Hemlock decline?: Response to the Hemlock Woolly Adelgid. Forest Health Information Meeting, Norfolk, Vermont, April 4, 2002.
- Martin, M.E., M.L. Smith, S.V. Ollinger, R.A. Hallett, L. Plourde, M. Sytek, J.H. Pontius, S.W. Bailey, J.D. Aber. 2001. AVIRIS Analysis of Watershed Function in the White Mountain National Forest. Tenth JPL Airborne Earth Science Workshop, Feb. 27 – March 2, 2001. Pasadena, California.
- Pontius, J.H., Hallett, R.A., Martin, M.E., Jenkins, J.L. and Bailey, S. 2001. Mechanisms of Hemlock Woolly Adelgid Invasion and Host Response. Northeastern Pest Council Meeting, Portland, Maine, March 18, 2001.
- Smith, M-L., R.A. Hallett, S.V. Ollinger, M.E. Martin, J.D. Aber and J.H. Pontius. 2000. The MAPBGC Project: Hyperspectral Remote sensing, Mapping and Analysis of Forest Productivity and Biogeochemical Cycles in the White Mountains, NH. Eighth Biennial Remote Sensing Applications Conference, April 10-14, 2000. Albuquerque, New Mexico.
- Pontius, J.H., Barrett J.A. and T.D. Lee. 1998. The effect of environmental factors on sugar maple distribution in the White Mountains of New Hampshire. Ecological Society of America Annual Meeting, Baltimore, MD, August 11-15, 1998.
- Pontius, J.H., Barrett J.A. and T.D. Lee. 1995. Potential sugar maple elevational migration in the face of global climate change. Women in Science Exposition, University of New Hampshire Durham, New Hampshire.

## **ATTAINMENT OF EXTERNAL FUNDS:**

### ***Current grants***

Lead Investigator. Opening up Northern Forest Research Data – Improving Citation and Documentation Systems to Increase Participation in Publishing Data. Research Data Alliance 2016-2017. \$35,712.

Co-Investigator. Disturbance dynamics across the Northern Forest: Synthesizing NSRC studies of ecosystem change within a regional forest health mapping framework. USFS-NSRC. 2016-2017. \$59,991

Lead Investigator. Vermont Monitoring Coop. USFS, NA and VT Department of Forests, Parks and Recreation. 2013-2018. \$1,500,000 (cumulative multi-year budget).

*Does not capture additional grants in support of VMC activities from: USGS, Colorado State, Lake Champlain Basin Program, VT Department of Environmental Conservation*

Lead Investigator. 30 years of forest conversion in the northeast: Historical patterns, ecosystem service impacts and future projections. USFS-NSRC. 2014-2017. \$83,066.

Lead Investigator. Integrated Forest Ecosystem Assessment to Support Sustainable management Decisions in a Changing Climate. MacIntire Stennis. 2014-2019. \$782,000.

Co- Investigator. Interaction of climate change, nitrogen deposition, and pest disturbance: a management tool for setting critical loads and predicting effects on forest health. NRS, 2015-2017. \$50,000 at NRS.

### **Completed grants**

Co-Investigator. Tree species distribution in landscape-scale forest carbon storage estimates: a comparison of methods. USFS-NSRC. 2015-2016. \$9,800.

Co-Investigator. Hanavan, R, Pontius, J. and Hallett, R. Early detection and mapping of the emerald ash borer (EAB), *Agrilus plannipenis*, using data fusion techniques with a concurrent, LiDAR, hyperspectral, and thermal imaging system and existing risk map and detection tools. USDA Forest Service STDP. 2013-2016. \$107,029.

Co-Investigator. Research and Strategic Planning for the Mount Mansfield Science and Stewardship Center. NSF. 2015-2016. \$24,987

Co-Investigator. Dupigny-Gireau, Lesley-Ann; et al. Satellites, Weather and Climate: A professional development teacher collaborative to enhance literacy in the climate, atmospheric and geospatial sciences (NSF). 2010-2015. \$400,000.

Co-Investigator. O'Neill-Dunn J. and Pontius, J. Interactive Forest Health Viewer for Vermont. USGS America View. 2014-2015. \$10,000.

Co-Investigator. Hyperspectral Remote Sensing Techniques to Assess a Decade of Hemlock Decline in the Catskills Mountains. USDA Forest Service NA. 2012-2013. \$50,000.

Lead Investigator. Data Mining the Bartlett Experimental Forest: A long-term assessment of changing forest demographics, productivity, biomass and remote sensing techniques MacIntire Stennis, 2012-2013. \$61,912

Lead Investigator. A top down approach to quantifying historical trends in Vermont's vegetation phenology in response to decadal climate change. Funded by MacIntire Stennis, RSENR. 2009-2012. \$61,912 (including graduate student stipend)

Lead Investigator. Using remote sensing to quantify and understand trends in northeastern forest health over the past 25 years. Funded by NSRC. 2008-2012. \$114,956

Co-Investigator. Forest Ecosystem Health in a Globalizing World: Building a Diverse Community of Scholars. Funded by USDA CSREES. 2008-2012. \$236,000.

Co-Investigator. Implementation, coordination and exploration of iMapinvasives invasive species mapping in Vermont and New Hampshire. Northeastern IPM Center. 2010-2011-2012. \$50,000.

Co-Investigator. Quantifying forest vegetation phenology in Vermont: Remote Sensing of 28 year trends in northeastern vegetation phenology, 2011-2012, \$5000. Funded by NSRC Graduate Research Grants.



- Co-Investigator. Forest condition change in Northern Vermont and New Hampshire: Potential causes and implications for landscape-scale analysis, 2011-2012, \$3000. Funded by NSRC Graduate Research Grants.
- Co-Investigator. A field investigation of spatial trends in Vermont forest health over the past 25 years. 2011-2012. \$3,500. Funded by the UVM Undergraduate Research Program.
- Co-Investigator. Frolik, Jeffrey; Moeser, Christopher; Wemple, Beverly; Pontius, Jennifer. The Vermont Frozen Landscape Monitoring Project. NASA EPSCOR. 2010-2011. \$100,000. Co-Investigator. Role is to develop remote sensing methods to transfer plot level measurements of complex forest canopies for landscape scale modeling of snow hydrology.
- Co- Investigator. Field implementation of High-Resolution Remote-Sensed Imagery for Rapid Early Detection of Emerald Ash Borer, Beech Bark Disease, Oak Wilt and Hemlock Woolly Adelgid in Urban and Rural Forest Landscapes in Michigan and Wisconsin. Funded by the USDA State and Private Forestry. 2008-2010. \$74,735.
- Co- Investigator. Landscape scale modeling of hemlock susceptibility to Hemlock Woolly Adelgid (HWA) and drought stressors in New England. Funded by the Eastern Forests Threats Center. 2007-2008. \$97,576.
- Co- Investigator. Assessment of Regional Forest Health and Stream and Soil Chemistry Using a Multi-Scale Approach and New Methods of Remote Sensing Interpretation in the Catskill Mountains of New York. Funded by the New York State Energy Research and Development Association. 2005-2008. \$202,000.
- Co- Investigator. Expansion of mesophytic species into historically oak-dominated forests: landscape consequences for fuels and fire behavior. Funded by the US Forest Service National Fire Plan. 2006-2008. \$104,500.
- Co- Investigator. Remote sensing for ash identification and pre-visual decline assessments. Funded by the Eastern Forests Threats Center. 2006-2007. \$49,055.
- Lead Investigator. Early Detection of Hemlock Woolly Adelgid Infestation: An Evaluation of a Commercially Available Hyperspectral Remote Sensing Tool. Funded by the US Forest Service Science Technology Development Program. 2005-2007. \$53,080.
- Co- Investigator. Aerial micro-nutrient application for hemlock health remediation. Funded by the US Forest Service Northern Research Station. 2005-2006. \$30,391.
- Lead Investigator. Mechanisms of Hemlock Woolly Adelgid Invasion and Host Response in Northeastern Hemlock Forests. Funded by the US Forest Service Northern Research Station. 2005-2006. \$100,000.
- Co- Investigator. Remote Sensing of vegetation health at the Elizabeth Mine Superfund Site. Funded by the Environmental Protection Agency. 2005-2006. \$21,523.
- Lead Investigator. Site Nutrient Status and Susceptibility to the Hemlock Woolly Adelgid. Funded by the US Forest Service Northern Research Station. 2003-2005. \$75,000.
- Lead Investigator. Assessing Hemlock Woolly Adelgid Infestation, Hemlock Health and Susceptibility Using Hyperspectral Remote Sensing Technologies. Funded by the US Forest Service Science Technology Development Program. 2002-2004. \$62,409.

## TEACHING RESPONSIBILITIES

*Note: Reported Overall Student Satisfaction Rating (1 highest possible score on a 5 point scale)*

### **ENSC 9: Orientation to Environmental Science**

2017: Enrollment 100,

2016: Enrollment 95, 3.97 Overall Student Satisfaction Rating (5 highest on a 1-5 scale)

### **NR 146.** Introduction to remote sensing of natural resources. 3 cr.

2017: Enrollment 48, (Hybrid) 4.49 Overall Student Satisfaction Rating (5 highest on a 1-5 scale)

2015: Enrollment 48 (Hybrid), 1.72 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2012: Enrollment 67, 1.53 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2010: Enrollment 35, 1.57 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2008: Enrollment 28, 1.73 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

### **NR140** Applied Environmental Statistics. 4 cr Service Learning component.

2017: Enrollment 70, 4.48 Overall Student Satisfaction Rating (5 highest on a 1-5 scale)

2016 Enrollment: 63 4.59 Overall Student Satisfaction Rating (5 highest on a 1-5 scale)

2015: Enrollment 58, 1.47 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2014: Enrollment 66, 1.45 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2013: Enrollment 65, 1.48 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2012: Enrollment 59, 1.71 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2011: Enrollment 65, 1.76 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2010: Enrollment 60, 1.48 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

2009: Enrollment 56, 1.53 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

### **NR 6** (Co- Facilitator). Race and Culture. 2 Cr. *(no official evaluation available)*

2012: Section Enrollment 18

2011: Section Enrollment 16

2010: Section Enrollment 16

2009: Section Enrollment 27

2008: Section Enrollment 22

### **NR 295** Remote Sensing for Biophysical Modeling. 4 cr.

2010: Enrollment 4, 1.17 Overall Student Satisfaction Rating (1 highest on a 1-5 scale)

### **NR 285** Structured Decision Making (Faculty Mentor). 3 cr.

2012: Enrollment 11, *(no official evaluation available)*

## STUDENT COMMITTEES

### Graduate Students (primary advisor)

- Apisom Intralawan: Land Use and Land Cover Change Dynamics and Their Implications: A Case Study of a Community Along the MeKong River. Ph.D. Natural Resources, 2008-2010.
- Mike Olson: Remote Sensing of forest health trends in the northern Green Mountains of Vermont. M.S. Forestry, 2009-2011.
- Katherine White: Remote Sensing of Spring Phenology: an assessment of methods, indices, and field metrics in northeastern forests. M.S. Forestry, 2010-2012.
- Aiko Weverka: Remote sensing of productivity in northeastern forests. M.S. Forestry, 2010-2012.
- Carly Brown: An assessment of the impacts of fire on rare Lepidoptera in the Ossipee Pine Barrens Preserve. M.S. Field Naturalist, 2011-2013.
- Emily Rusell-Roy: Rehabilitation forestry and carbon market access on overharvested, former industrial northern hardwood forests. M.S. Forestry, 2012-2014.
- Jeffrey Krebs: The Potential Effects of the Hemlock Woolly Adelgid on the Carbon Dynamics of Northern New England Forests. M.S. Forestry, 2012-2014.
- Sam Talbot: Wildlife Habitat Linkages Surrounding Lake George and Southern Lake Champlain. M.S. Field Naturalist, 2014-2016.
- Alison Adams: Methods for the spatial modeling of forest carbon in the Northern Forest. M.S. Forestry, 2014-2016.
- David Gudex-Cross: Forest ecosystem assessment and modeling: methods and tools for the sustainable management of northern forests. Ph.D. Natural Resources, 2014 – present.
- Andrew Wood: Rapid Assessment of Wildlife Crossings in the Berkshire Wildlife Linkage. M.S. Ecological Planning, 2016 – present.

### Graduate Student Committees

- Sophia DeMaio: Dendrochronological analysis of hemlock woolly adelgid infestations across the northeastern US. (MS). University of Maine, Orono. 2006 - 2008.
- Caitlin McDonough: Collaboration at High Elevations: Monitoring Alpine Plant Phenology in the White Mountains with Citizen Scientists. M.S. Field Naturalist. 2008 - 2010.
- Ali Kosiba: Quantifying the Influence of Winter Injury on the Carbon Sequestration of Red Spruce Trees in the Northeastern United States. M.S. Forestry. 2009 - 2011.
- Taylor Bushnell: Monitoring Protocols for the Ossipee (NH) and Waterboro (ME) Pine Barrens. M.S. Field Naturalist Program). 2009 - 2011.

- Bryarly McEachern: Modeling land stewardship at VINS: Opportunities for research and education. M.S. Field Naturalist. 2009 - 2011.
- Neagha Leonard: Monitoring Patchy Groundcover: A Photographic Technique for Shenandoah National Park. M.S. Field Naturalist. 2010 - 2012.
- Holli Howard: Methods for Mapping Zones in the Urban-Rural Gradient to Strengthen Ecological Vulnerability Planning. M.S. Natural Resources. 2010 – 2012.
- Charles Nicholson (PhD). Natural Resources. Matriculated September 2013.
- Benjamin Engle: Investigating the Relationship Between Modeled Calcium Depletion and Red Spruce Growth and Response to Environmental Stresses. M.S. Forestry. 2012 – 2014.
- Jonathan Cummings: Decision Support for Natural Resources Management. Ph.D Forestry and Wildlife. 2010 - 2014.
- Matthew Cahill: Changes in White Pine Blister Rust (*Cronartium ribicola*) Infections in High-Elevation White Pines in Sequoia and Kings Canyon National Parks, USA. M.S. Field Naturalist Program. 2012 - 2014.
- Gus Goodwin: An assessment of spatial variation in calcium content of glacial till for the Green Mountain National Forest, Vermont. M.S. Field Naturalist 2012 - 2014.
- Sebastian Castro: Agroecology and ecosystem services in a coffee landscape of Costa Rica. Ph.D. Plant and Soil Science. 2010 - 2014.
- Rebecca Stern: Evaluating climate and environmental drivers of tree species' growth and adaptation within the northern forest. Ph.D. Natural Resources. 2014 – present.
- Shelby Perry: Ecological Inventory of Deer Lake and E. B. Hyde Properties, Worcester, VT. M.S. Field Naturalist. 2014 – 2016.
- Samuel Ervin: Describing Forest Structure in Old Growth Southern Blue Ridge Cove Forests: A LiDAR-Based Analysis. M.S. Field Naturalist. 2014 – 2016.
- Anya Tyson. NOLS and Nutcrackers: Investigating the Motivations, Barriers, and Benefits to Citizen Science Participation among Outdoor Adventure Educators. M.S. Field Naturalist. 2015 – 2017.
- Lyra Brennan: An Ecological Inventory and Assessment of the Pond Brook Region in Monkton, Vermont. M.S. Ecological Planning Program. 2015 – 2017.
- Nicole Rogers: Long-Term Dynamics and Silviculture of Northern Hardwood Forests in the Northeast United States. Ph.D. Natural Resources. 2015 – present.
- Molly Heuss: Evaluating the Effects of Southern Pine Beetle in a Newly Invaded Region. M.S. Forestry. 2015 - present.
- Emma Sass: Lasting legacies of hurricane, harvesting, and salvage logging disturbance on succession and structural development in an old-growth *Tsuga canadensis* – *Pinus strobus* forest. M.S. Forestry. 2015 - present.

### ***Undergraduate Honors Theses***

#### **Adviser**

- 2010 \*Johannes Griesshammer Range and variability analysis of foliar chemistry for common species throughout the northeastern United States
- 2011 \*Dylan Harry A field investigation of Northeastern forest health trends
- 2012 \*Maxwell Reis, Long-term trends in northern hardwood phenology; an examination of possible relationships with abiotic factors
- 2016 \*John Kilbride, New dendrochronological approaches to identifying climate drivers in northern conifers.

#### **Committees**

- 2010 Michael Lester The Influence of Lunar Phase and Predation on the Vocalization Behavior of Eastern Whip-poor-wills
- 2010 Audrey Reid Comparing the Responsiveness of Streams and Ponds to Decreases in Acid Deposition in the White Mountains of New Hampshire
- 2010 Autumn Amici The Effects of Urban Habitats on Arthropod Prey Availability for Woodpeckers
- 2011 Katy Lord Beaver Foraging in Northern Vermont Wetlands: A Field Test of Central Place Foraging Theory
- 2016 Emily Peterson Modeling Siberian Ibex (*Capra sibirica*) Occupancy in Ikh Nart Nature Reserve
- 2016 Jessica Mailhot, Wingstrokes: Linking migration citizen science data for Blue-headed & Red-eyed Vireos to spring climate in Vermont as depicted visually in art
- 2017 Kristin Switzer In development
- 2017 Lucas Myers In development

#### ***Internship Supervisor***

- 2009 Eden Furtak-Cole Statistics and Modeling
- 2010 Anna Caragee Remote Sensing
- 2011 Jon Schniederma Remote Sensing
- 2011 Andrea Brendalen Greenhouse Softwood Propagation
- 2012 Maxwell Reis Geospatial Analysis
- 2012 Bonnie Ricord Crop breeding and genetics: a business perspective
- 2012 Allison Carrier Interpretive Guides for the National Parks Service
- 2013 Thomas Neweinhaus Hyperspectral Remote Sensing

2013	Amy Mietekwitz	Statistics and Forest Ecology
2013	Tiffany Doley	Water Keepers Alliance, non-profit management and marketing
2013	Annie Rosenbauer	Conservation and Wildlife Rehabilitation
2014	Jonathan Farmer	GIS for carbon accounting
2014	Andrea Blaser	GIS for Green Stormwater Infrastructure
2014	Catlin Trimmer	Landscape assessments of Forest Structure
2014	Amanda Adams	Historical Population Trends of Florida's Fisheries
2014	Colleen Iral	Tracking CSA Produce Quality Using the BRIX system
2014	Justin Sackel	VMC Forest Health Evaluation
2014	Sam Bennet	VMC Forest Health Evaluation
2014	Ellen Loftis	VMC Forest Health Evaluation
2015	Amanda Adams Interior Alaska	Pacific Salmon Population Research on the Gisasa River,
2015	Christine Sandback	VMC Forest Health Evaluation
2015	Caitlin Trimmer	VMC Forest Health Evaluation
2015	Helena Murray	VMC Forest Health Evaluation
2015-2016	Jessie Little Productivity	EPSCOR Student Research Remote Sensing of Forest
2015-2016	Emma Tait Productivity	EPSCOR Student Research Remote Sensing of Forest
2015-2016	Jack Kilbride Productivity	EPSCOR Student Research Remote Sensing of Forest
2016	Nikki Bouda Sector	Evaluating and Managing Nonprofits in the Environmental
2016	Sarah Linder	World PEAS Food Hub Quality control and Infrastructure
2016	Laura Stalter Development	Missisquoi National Wildlife Refuge Wildlife Education
2016	John Truong,	VMC Forest Health Evaluation
2016	Diana Gurvitch	VMC Forest Health Evaluation
2017	Alison Schwartz	ECHO
2017	Chang Gao	Environmental Science Laboratory Methods

## **SERVICE**

### **University**

Forestry Curriculum Committee (2008 – present)  
Natural Resources Curriculum Committee (2008 – present)  
Environmental Science Curriculum Committee (2008 – present)  
Admitted Students Day Faculty Representative (2008-present)  
Freshmen Orientation Representative (2008-2013)  
Writing in the Disciplines Fellow (2010)  
NYC School Field Visit RSENR experience leader 2010  
Honors and Studies Committee (2009 – 2012, chair 2010-2012)  
Lake Ecology Faculty Search Committee (2010 and 2011)  
Graduation Marshall (2010-2016)  
Database Manager Search Committee (2012)  
School Affairs Committee (chair 2012-2013)  
Grants Administrator Search Committee (2014)  
Core Curriculum Committee (2014- 2017)  
Sea Grant Extension Faculty Search Committee (2015)  
Hybrid Initiative Fellow (2015)  
Union Delegate (RSENR) (2015 – 2016)  
Director Environmental Science Program (2015 – present)  
Opportunity Hiring Committee (ENSC) (2016)  
Opportunity Hiring Committee (ENSC) (2016)  
Faculty Senate (RSENR) (2017 – present)

### **Professional Service**

USFS Research Natural Area NRS Coordinator (2007 – present)  
USFS RNA Establishment Committee (2007 – 2008)  
Proposal Review Panel: NASA HypsIRI Preparatory Activities Using Existing Imagery solicitation (ROSES 2010 A.25). Washington, DC August 16-18, 2010.  
Proposal Review Panel: NSF Geography and Spatial Sciences Program. 2011.  
Proposal Review Panel: MacIntire-Stennis (UAK Fairbanks) 2011.  
USFS Research Natural Area Establishment Review Committee (2013-present)

ECANUSA Conference Planning Committee (2014)

Proposal Review Panel: NSRC Theme 3. 2015

ECANUSA Conference Coordinator (2015-2016)

Technical Reviewer NH/VT 5-Year FIA Report (2012)

Reviewer: USFS RNA Establishment Records (~1/year)

Text Reviewer, Sage Publications. Statistics for People Who Think they Hate Statistics  
Version 4.

Technical Editor: The Nature Conservancy. Best Management Practices for Managing  
Invasive Species

Guest Editor: Northeastern Naturalist

Nature Reader Advisory Panel

**Journal reviews** (*multiple reviews are indicated by \**):

Agricultural and Forest Entomology

Annals of the Entomological Society of America

Annals of Ecology and Population Biology

Canadian Journal of Forest Research

Cities and the Environment

Ecosphere\*

Environmental Entomology\*

Environmental Monitoring and Assessment

Functional Ecosystems and Communities

Northeastern Geographer

Remote Sensing\*

Remote Sensing of Environment\*

International Journal of Remote Sensing\*

ISPRS International Journal of Geo-Information

Photogrammetric Engineering and Remote Sensing

PLOS One\*

**Community**

Vermont Monitoring Cooperative Advisory Committee (2009-2013)

Forest Ecosystem Monitoring Cooperative Principle Investigator (2013 – present)



VT FRP Forester III Selection Committee (2014)

MMSSC Steering Committee (2015-2016)

Vermont Natural Resource Council Parcelization Steering Committee (2015-present)

Hubbard Brook Research Foundation Climate Change Roundtable Panel (2016)

Hubbard Brook Research Foundation: Biodiversity Research Roundtable Panel (2016)

## **AWARDS AND HONORS**

Maurice Kopesh Teaching Award Nomination

Outstanding Faculty Advisor Nomination

Marcia Caldwell Award