

CURRICULUM VITAE

John J. Battles

University of California, Berkeley
Department of Environmental Science, Policy, and Management
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EDUCATION

Cornell University:
Ph.D. in forest science, May 1994.

Yale University:
B.S. in biology, May 1985.
Graduated summa cum laude with distinction in the major.

PROFESSIONAL EXPERIENCE

Professor of forest ecology, Department of Environmental Science, Policy, and Management,
UC Berkeley, July 2009 to present.

Chair, Ecosystem Science Division, Department of Environmental Science, Policy, and
Management, UC Berkeley, July 2010 to June 2014.

Co-Director, Center for Forestry, College of Natural Resources, UC Berkeley,
December 2000 to June 2010.

Associate/Assistant professor of forest ecology, Department of Environmental Science, Policy,
and Management, UC Berkeley, January 1995 to June 2009.

Postdoctoral research associate, Department of Natural Resources, Cornell University,
January 1994 to December 1994.

Research staff scientist, University of Pennsylvania, May 1986 to August 1988.

HONORS AND AWARDS

Departmental Award for Student Mentoring (voted by students) -- 2013
Departmental Award for Undergraduate Teaching Excellence -- 2004
Hellman Faculty Fellow --1998

SERVICE TO SCHOLARLY, PUBLIC, AND GOVERNMENTAL ORGANIZATIONS

Board of Editors, Ecology and Ecological Monographs.

Lead Investigator, The Sierra Nevada Adaptive Management Project
(<http://snamp.cnr.berkeley.edu/>).

Board of Directors, Spatial Informatics Group – Natural Assets Laboratory (SIG-NAL)
SIG-NAL is a non-profit (501c3) organization with a mission to develop and apply the scientific foundation needed to link economic and environmental interests by accounting for the full value of natural assets (<http://www.sig-nal.org/>)

Co-chair of the Science Coordinating Committee for the Hubbard Brook Ecosystem Study.
(<http://www.hubbardbrook.org/>)

Instructor and University Partner, Forestry for Lawyers Initiative. Forestry for Lawyers is a joint effort of the USDA Forest Service and US Department of Justice. This week-long field course is designed to help federal lawyers understand the ecology and management of the ecosystems they work to protect.

PEER-REVIEWED PUBLICATIONS (ResearcherID: G-8233-2012)

In press

Glassman, S.I., C. R. Levine, A.M. DiRocco, **J. J. Battles** and T. D. Bruns. In revision. Ectomycorrhizal fungal spore bank recovery after a severe forest fire: Some like it hot. The ISME Journal.

Tempel, D.J., R. J. Gutiérrez, **J. J. Battles**, D. L. Fry, Yanjun Su, Qinghua Guo, M. J. Reetz, S. A. Whitmore, G. M. Jones, B. M. Collins, S. L. Stephens, M. Kelly, W. J. Berigan, and M. Z. Peery. In press. Modeling short- and long-term impacts of fuels treatments and wildfire on an old-forest species. Ecosphere.

Eitzel, M., **J.J. Battles**, R.A. York, and P. de Valpine. In press. Can't see the trees for the forest: complex factors influence survival in a temperate second-growth forest. Ecosphere.

Last ten years

Jones, D., K.O. O'Hara, **J.J. Battles**, and R. Gersonde. 2015. Alternative procedures for leaf area estimation in Sierra Nevada conifer trees. *Forests* 6: 2631-2654.

Falster, D.S. et al. 2015. BAAD: a biomass and allometry database for woody plants. *Ecology* 96: 1445. (Note: I am one of 96 contributors to this peer-reviewed database project.)

Cousins, Stella, J.M., **J.J. Battles**, J.E.Sanders, and R.A. York. 2015. Decay patterns and carbon density of standing dead trees in California Mixed Conifer Forests. *Forest Ecology and Management* 353: 136-147.

Gonzalez, P., **J.J. Battles**, B.M. Collins, T. Robards, and D.S. Saah. 2015. Aboveground live carbon stock changes of California wildland ecosystems, 2001-2010. *Forest Ecology and*

Management 348: 68-77 (**Scored in the 98th percentile by Altmetric**).

Fahey, T.J., K. S. Kassam, P.H. Templer, B. T. Anderson, A. R. Fusco, **J. J. Battles**, J. L. Campbell, L. Rustad, C. T. Driscoll Jr., M. B. Green, N. L. Rodenhouse, P. G. Schaberg, M. A. Vadeboncoeur. 2015. The promise and peril of intensive-site-based ecological research: Insights from the Hubbard Brook Ecosystem Study. *Ecology*: 96:885-901.

Dufour, S., M.K. Hayden, J. C. Stella, H. Piégay and **J. J. Battles**. 2014. Maintaining channel abandonment processes increases riparian plant diversity within fluvial corridors. *Ecohydrology*. DOI:10.1002/eco.1546

Collins, B.M., A.J. Das, **J. J. Battles**, D. L. Fry, K. D. Krasnow, and S. L. Stephens. 2014. Beyond reducing fire hazard: fuel treatment impacts on overstory tree survival. *Ecological Applications* 24: 1870-1886.

Cleavitt, N.L., **J.J. Battles** T.J. Fahey, and J.L. Blum. 2014. Determinants of survival over seven years for a natural cohort of sugar maple seedlings in a northern hardwood forest. *Canadian Journal of Forest Research* 44:1112-1121.

Johnson, C.E., C.T. Driscoll, J.D. Blum, T.J. Fahey and **J.J. Battles**. 2014. Soil chemical dynamics after calcium silicate addition to a northern hardwood forest. *Soil Science Society of America Journal* 78:1458-1468.

Eschtruth, A.K. and **J.J. Battles**. 2014. Ephemeral disturbances have long lasting impacts on forest invasion dynamics. *Ecology* 95:1770-1779.

Roman, L.A., **J.J. Battles**, and J.R. McBride. 2014. Determinants of establishment survival for residential trees in Sacramento County, CA. *Landscape & Urban Planning* 129: 22-31.

Lydersen, J.M., B. M. Collins, C.B. Dow, P. Gonzalez, C. M. Ewell, D. S. Saah, A.L. Reiner, J. Fites and **J.J. Battles**. 2014. Using field data to assess model predictions of surface and ground fuel consumption by wildfire in coniferous forests of California. *Journal of Geophysical Research: Biogeosciences* 119:223-235.

McLauchlan, K.K., P. E. Higuera, D. G. Gavin, S. S. Perakis, M. C. Mack, H. Alexander, **J. Battles**, F. Biondi, B. Buma, D. Colombaroli, S. Enders, D. R. Engstrom, F. S. Hu, J. R. Marlon, J. Marshall, M. McGlone, J. L. Morris, L. E. Nave, B. N. Shuman, E. Smithwick, D. H. Urrego, D. A. Wardle, C. J. Williams, J. J. Williams. 2014. Reconstructing disturbances and their biogeochemical consequences over multiple timescales. *BioScience* 64:105-116.

Battles, J.J., T.J. Fahey, C.T. Driscoll, J.D. Blum, and C. E. Johnson. 2014. Restoring soil calcium reverses forest decline. *Environmental Science and Technology Letters* 1: 15-19. (**Journal's "Top 20" for 2014**).

Roman, L.A., **J.J. Battles**, and J.R. McBride. 2013. The balance of planting and mortality in a street tree population. *Urban Ecosystems*. DOI 10.1007/s11252-013-0320-5.

Eitzel, M., **J.J. Battles**, R.A. York, J. Knape, and P. de Valpine. 2013. Estimating tree growth models from complex forest monitoring data. *Ecological Applications* 23: 1288-1296.

Eschtruth, A. K., R.A. Evans, and **J.J. Battles**. 2013. Patterns and predictors of survival in *Tsuga canadensis* populations infested by the exotic pest *Adelges tsugae*: 20 years of monitoring. *Forest Ecology and Management* 305: 195-203.

Green, M.B., A.S. Bailey, S.W. Bailey, **J. J. Battles**, J. L. Campbell, C. T. Driscoll, T.J. Fahey, L. Lepine, G.E. Likens, S.V. Ollinger, and P.G. Schaberg. 2013. Decreased water flowing from a forest amended with calcium silicate. *Proceedings of the National Academy of Science* 110: 5999–6003.

York, R.A., O'Hara, K.L. & **Battles, J.J.** 2013. Density effects on giant sequoia (*Sequoiadendron giganteum*) growth through 22 years: Implications for restoration and plantation management. *Western Journal of Applied Forestry* 28:483-495.

Sherman, R.E., T.J. Fahey, P.H. Martin, and **J.J. Battles**. 2012. Patterns of growth, recruitment, mortality and biomass across an altitudinal gradient in a neotropical montane forest, Dominican Republic. *Journal of Tropical Ecology* 28:483-495.

Qi Chen, G. V. Laurin, **J. J. Battles**, and D.S. Saah. 2012. Integration of airborne lidar and vegetation types derived from aerial photography for mapping aboveground live biomass. *Remote Sensing of Environment* 121:108-117.

York, R.A., **J.J. Battles**, R.C. Wenk, and D.S. Saah. 2012. A gap-based approach for regenerating pine species and reducing surface fuels in multiaged mixed conifer stands in the Sierra Nevada, California. *Forestry* 85:203-213.

van Mantgem, P.J., N.L. Stephenson, E. Knapp, **J.J. Battles** and J.E. Keeley. 2011. Long-term effects of prescribed fire on mixed conifer forest structure in the Sierra Nevada, California. *Forest Ecology and Management* 261: 989-994.

van Doorn, N. S., **J.J. Battles**, T.J. Fahey, T.G. Siccama, and P.A. Schwarz. 2011. Links between biomass and tree demography in a northern hardwood forest: A decade of stability and change in Hubbard Brook Valley, New Hampshire. *Canadian Journal of Forest Research* 41: 1369-1379.

Eschtruth, A. K. and **J. J. Battles**. 2011. The importance of quantifying propagule pressure to understand invasion: an examination of riparian forest invasibility. *Ecology* 92:1314-1322.

Obrist, D., D. W. Johnson, S. E. Lindberg, Y. Luo, O. Hararuk, R. Bracho, **J. J. Battles**, D. B. Dail, R. L. Edmonds, R. K. Monson, S. V. Ollinger, S. G. Pallardy, K. S. Pregitzer, and D. E. Todd. 2011. Mercury Distribution Across 14 US Forests. Part I: Spatial Patterns of Concentrations in Biomass, Litter, and Soils. *Environmental Science & Technology* 45:3974-3981.

- Collins, B. M., S. L. Stephens, G. B. Roller, and **J. J. Battles**. 2011. Simulating fire and forest dynamics for a landscape fuel treatment project in the Sierra Nevada. *Forest Science* **57**:77-88.
- Das, A., **J. Battles**, N. L. Stephenson, and P. J. van Mantgem. 2011. The contribution of competition to tree mortality in old-growth coniferous forests. *Forest Ecology and Management* **261**:1203-1213.
- Stella, J., M. Hayden, **J. Battles**, H. Piegay, S. Dufour, and A. K. Fremier. 2011. The Role of Abandoned Channels as Refugia for Sustaining Pioneer Riparian Forest Ecosystems. *Ecosystems* **14**:776-790.
- Cleavitt, N.L., T.J. Fahey, and **J.J. Battles**. 2011. Regeneration ecology of sugar maple (*Acer saccharum*): seedling survival in relation to nutrition, site factors, and damage by insects and pathogens. *Canadian Journal of Forest Research*. 41: 235–244.
- York, R.A., **J. J. Battles**, A.K. Eschtruth, and F. G. Schurr. 2011. Giant sequoia (*Sequoiadendron giganteum*) regeneration in experimental canopy gaps. *Restoration Ecology* **19**:14-23.
- Stella, J.C., **J. J. Battles**, and J.R. McBride and B. K. Orr. 2010. Riparian seedling mortality from simulated water table recession, and the design of sustainable flow regimes on regulated rivers. *Restoration Ecology* **18**:284-294.
- Stella, J.C. and **J.J. Battles**. 2010. How do riparian woody seedlings survive seasonal drought? *Oecologia* **164**:579-590.
- York, R. A., D. Fuchs, **J.J. Battles** and S.L. Stephens. 2010. Radial growth responses to gap creation in large, old *Sequoiadendron giganteum*. *Journal of Applied Vegetation Science* **1**: 1-12.
- Gonzalez, P., G.P. Asner, J.J. Battles, M.A. Lefsky, K.M. Waring and M. Palace. 2010. Forest carbon densities and uncertainties from Lidar, QuickBird, and field inventories in California. *Remote Sensing of the Environment* **114**: 1561-1575.
- Fahey, T.J., P.B. Woodbury, **J.J. Battles**, S. Ollinger, S. Hamburg, C. Woodall, and C. Goodale. 2010. Forest Carbon: Ecology, Management and Policy. *Frontiers in Ecology and the Environment* **8**: 245-252.
- Yanai, R.D., **J.J. Battles**, A. D. Richardson, C.A. Blodgett, D.M. Wood, and E.B. Rastetter. 2010. Estimating uncertainty in ecosystems budgets. *Ecosystems* **13**:239-248.
- Collins, B.M., S.L. Stephens, J. J. Moghaddas, and **J.J. Battles**. 2010. Challenges and approaches in planning fuel treatments across fire-excluded forested landscapes. *Journal of Forestry* **108**: 24-31.
- Eschtruth, A.K. and J.J. Battles. 2009. Assessing the relative importance of disturbance, herbivory, species diversity, and propagule pressure in exotic plant invasion. *Ecological Monographs* **79**:265-280.

- Eschtruth, A.K. and J.J. Battles. 2009. Acceleration of exotic plant invasion in a forested ecosystem by a generalist herbivore. *Conservation Biology*: 23:388-399.
- Das, A., J.J. Battles, N.L. Stephenson, and P.J. van Mantgem. 2008. Spatial elements of mortality risk in old-growth forests. *Ecology* 89: 1744-1756.
- Cleavitt, N. L., Eschtruth, A. K., Battles, J. J. and Fahey, T. J. 2008. Bryophyte responses to eastern hemlock decline following a hemlock woolly adelgid infestation. *Journal of the Torrey Botanical Society* 135: 12-25.
- Eschtruth, A.K and J.J. Battles. 2008. Deer herbivory alters forest response to canopy decline caused by an exotic insect pest. *Ecological Applications* 18: 360-376.
- Battles, J.J., T. Robards, A. Das, K. Waring, J.K. Gilles, G. Biging, and F. Schurr. 2008. Climate change impacts on forest growth and tree mortality: a data-driven modeling study in a mixed-conifer forest of the Sierra Nevada. *Climatic Change* 87: S193-S213.
- York, R.A., J. J. Battles, and R.C. Heald. 2008. Depth of positive edge effect on mature trees surrounding group selection openings. *Western Journal of Applied Forestry* 23:94-98.
- Menning, K. M., J. J. Battles, and T. L. Benning. 2007. Quantifying change in distributions: A new departure index that detects, measures and describes change in distributions from population structures, size-classes and other ordered data. *Oecologia* 154(1): 75-84.
- Das, A., J.J. Battles, N.L. Stephenson, and P.J. van Mantgem. 2007. The relationship between tree growth patterns and likelihood of mortality: a study of two tree species in the Sierra Nevada. *Canadian Journal of Forest Research* 37: 580-597.
- Stella, J.C., J. J. Battles, B. K. Orr, and J.R. McBride. 2006. Synchrony of seed dispersal, hydrology and local climate in a semi-arid river reach in California. *Ecosystems* 9: 1200-1214.
- York, R.A., J. J. Battles, and R. C. Heald. 2006. Release potential of giant sequoia following heavy suppression: 20 year results. *Forest Ecology and Management* 234: 136-142.
- Eschtruth, A.K., N. L. Cleavitt, J. J. Battles, R. A. Evans, and T. J. Fahey. 2006. Vegetation dynamics in declining hemlock stands: nine years of forest response to hemlock woolly adelgid infestation. *Canadian Journal of Forest Research*. 36:1435-1450.
- Wenk, R. C., J. J. Battles, R. D. Jackson, J. W. Bartolome, and B. Allen-Diaz. 2006. An accurate and efficient method for sorting root cores using point-intercept sampling. *Soil Sci Soc Am J* 70: 851-855.
- Kayler, Z.E, L. B. Fortini, and J. J. Battles. 2006. Group selection edge effects on the vascular plant community of a Sierra Nevada old growth forest. *Madrono* 52: 262-266.
- Fahey, T.J, T.G. Siccama, C.T. Driscoll, G.E. Likens, J. Campbell, C.E. Johnson, J.J. Battles,

J.D. Aber, J.J. Cole, M.C. Fisk, P.M. Groffman, S.P. Hamburg, R.T. Holmes, P.A. Schwarz, and R.D. Yanai. 2005. The biogeochemistry of carbon at Hubbard Brook. *Biogeochemistry* 75:109-176.

REPORTS, BOOK CHAPTERS AND PUBLIC OUTREACH (last five years)

Battles, J.J., S.J.M. Cousins, and J.E. Sanders. 2015. Carbon Dynamics and Greenhouse Gas Emissions of Standing Dead Trees In California Mixed Conifer Forests. California Energy Commission. Publication number: CEC-500-2015-TBD.

Battles, J.J., P. Gonzalez, T. Robards, B.M. Collins, and D.S. Saah. 2014. Final Report: California Forest and Rangeland Greenhouse Gas Inventory Development. California Air Resources Board Agreement 10-778. <http://www.arb.ca.gov/research/apr/past/10-778.pdf>

National Park Service. 2013. A natural resource condition assessment for Sequoia and Kings Canyon National Parks. Natural Resource Report. *Edited* by C. Sydoriak, J.A. Panek, J.J. Battles, and K. R. Nydick. NPS/SEKI/NRR—2013/665. Fort Collins, Colorado. Published Report-2195490.

Battles, J.J., D. S. Saah, T. Robards; S. Cousins, R. A. York and D. Larson. 2013. A natural resource condition assessment for Sequoia and Kings Canyon National Parks: Appendix 12 – intact forests. Natural Resource Report. NPS/SEKI/NRR—2013/665.12. National Park Service. Fort Collins, Colorado. Published Report-2195699.

Battles, J.J., T. Moody and D. S. Saah. 2013. A natural resource condition assessment for Sequoia and Kings Canyon National Parks: Appendix 21 – altered fire regimes. Natural Resource Report. NPS/SEKI/NRR—2013/665.21. National Park Service. Fort Collins, Colorado. Published Report-2195801.

Eschtruth, A.K., J.J. Battles and D.S.Saah. 2013. A natural resource condition assessment for Sequoia and Kings Canyon National Parks: Appendix 9 – five-needle pines. Natural Resource Report. NPS/SEKI/NRR—2013/665.9. National Park Service. Fort Collins, Colorado. Published Report-2195577.

York, R.A., N. L. Stephenson. M. Meyer, S. Hanna, T. Moody, A.C. Caprio and J.J. Battles. 2013. A natural resource condition assessment for Sequoia and Kings Canyon National Parks: Appendix 11a – giant sequoias. Natural Resource Report. NPS/SEKI/NRR—2013/665.11a. National Park Service. Fort Collins, Colorado. Published Report-2195594.

Campbell, J.L., A.S. Bailey, C. Eagar, M.B. Green, and J.J. Battles. 2013. Vegetation treatments and hydrologic responses at the Hubbard Brook Experimental Forest, New Hampshire. In: Camp, A.E., L.C. Irland and C.J.W. Carroll (eds). Long-term silvicultural & ecological studies: Results for science and management. Volume 2. Yale University, Global Institute of Sustainable Forestry, Research Paper 013: 1-9.

Battles, J.J. 2012. Fuel treatments can address wildfire severity. *California Forests* 16: 14-15 (Public Outreach).

Bales, R.C., J.J. Battles, Y. Chen, M. H. Conklin, E. Holst, K. L. O'Hara, P. Saksa, and W. Stewart . 2011. Forests and Water in the Sierra Nevada: Sierra Nevada Watershed Ecosystem Enhancement Project. <http://ucanr.edu/sites/cff/files/146199.pdf>

Baldocchi, D.D. Chen, Q., Chen, X., Ma, S., Miller, G., Ryu, Y., Xiao, J., Wenk, R. and Battles, J. 2010. The Dynamics of Energy, Water and Carbon Fluxes in a Blue Oak (*Quercus douglasii*) Savanna in California, USA, In: Hill, M. J. and N. P. Hanan, Eds. (2010). *Ecosystem Function in Savannas: measurement and modeling at landscape to global scales*. Boca Raton, CRC Press.

PUBLICATIONS OF UNDERGRADUATE RESEARCHERS

(The papers below are from undergraduate researchers whom I mentored. All of the publications are associated with undergraduate honors research or Environmental Science capstone research projects that I supervised. The Berkeley Scientific is a journal for undergraduate research where faculty serve as peer reviewers.)

Sodergren, C. J. 2014. Relative effects of fog, competition and tree size on coast redwood growth in Strawberry Canyon, Berkeley, California. Environmental Science Senior Capstone Research Project. <http://nature.berkeley.edu/classes/es196/projects/2014final/index.html>.

Rachel Phoa, R. H. 2014. Improving the management of invasive Golden apple snails (*Pomacea analiculata*) in the Singapore Quarry. Environmental Science Senior Capstone Research Project. <http://nature.berkeley.edu/classes/es196/projects/2014final/index.html>.

Mounton, A. P. 2014. The effect of ground cover and proximity to neighborhood parks on bird diversity in San Francisco's Mission District. Environmental Science Senior Capstone Research Project. <http://nature.berkeley.edu/classes/es196/projects/2014final/index.html>

Harnoto, M. F. 2013. A comparative life cycle assessment of compostable and reusable takeout clamshells at the University of California, Berkeley. Environmental Science Senior Capstone Research Project. <http://nature.berkeley.edu/classes/es196/projects/2013final/index.html>.

Perryman, M. J. 2013. Evaluating the invasive potential of South American spongeplant, *Limnobiium laevigatum* (Humboldt and Bonpland ex Willdenow) Heine, in California's Sacramento-San Joaquin Delta. Environmental Science Senior Capstone Research Project. <http://nature.berkeley.edu/classes/es196/projects/2013final/index.html>

Tane, Z. 2009. Spatial patterns of biomass change in northern hardwood forests. UC Berkeley Honor's Research Symposium, Berkeley, CA.

Sprague, A. 2009. Evaluating the role of climate in tree growth in a Sierran conifer forest. Berkeley Scientific. 13: 28-33.

Yee, S-A. 2007. Effect of a soil calcium addition on the extension and radial growth rates of American beech (*Fagus grandifolia*) saplings. Berkeley Scientific 11: 42

Solomonoff, N. 2005. Creation and evaluation of a master chronology for *Abies concolor* in Sequoia National Park. *Berkeley Scientific* 9: 39-42.

Bass, P. 2003. Red spruce saplings: Indicators for future forest composition in New England forests recovering from acid rain. *Berkeley Scientific* 7:129-134.

Das, R. 2000. A field study of Douglas-fir and ponderosa pine seedling performance: The importance of mycorrhizal abundance. *Berkeley Scientific* 4: 128-131.

Walker, C. 1998. Growth of two sympatric tree species in the family Cupressaceae in a temperate, pristine rainforest. *Berkeley Scientific* 2: 134-137.