

## Paul K. Barten, Ph.D.

Professor

University of Massachusetts Amherst  
Department of Environmental Conservation  
Holdsworth Hall

Amherst, Massachusetts 01003-9285

[pkbarten@eco.umass.edu](mailto:pkbarten@eco.umass.edu); <http://eco.umass.edu/>; 413.545.2665 (Main office)

### EDUCATION

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Ph.D.	1988	Forest Hydrology and Watershed Management, University of Minnesota, College of Natural Resources, St. Paul
M.S.	1985	Forest Hydrology (minor: Soil and Water Conservation Engineering), University of Minnesota, College of Natural Resources, St. Paul
B.S.	1983	Forest Resources Management, <i>magna cum laude</i> SUNY College of Environmental Science and Forestry, Syracuse, NY
A.A.S.	1981	Biological Sciences Ulster County Community College, Stone Ridge, NY
A.A.S.	1977	Forest Technology/Surveying, <i>magna cum laude</i> New York State Ranger School, Wanakena, NY

### EMPLOYMENT

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2010-pres.	Professor, University of Massachusetts, Department of Environmental Conservation
[2009-14	Executive Director, Great Mountain Forest, Norfolk and Canaan, CT]
[2003-04	Bullard Research Fellow, Harvard University, Harvard Forest, Petersham, MA]
1997-2010	Associate Professor, University of Massachusetts, Dept. of Nat. Resources Conservation
1997-99	Adjunct Associate Professor, Yale University, Forestry and Environmental Studies
1992-97	Associate Professor, Yale University, School of Forestry and Environmental Studies
1988-92	Assistant Professor, Yale University, School of Forestry and Environmental Studies
1983-88	Research and Teaching Assistant, Univ. of Minnesota, Dept. of Forest Resources
1983-85	Land Surveyor, Ernest G. Rud & Sons, L.L.S., Lexington, Minnesota
1981-85	U.S. Army Reserve, 156 <sup>th</sup> Field Artillery Battalion, NY 385 <sup>th</sup> Combat Engineer Brigade, MN
1978-81	U.S. Army, Presidential Honor Guard, 3rd U.S. Infantry Regiment, Fort Myer, VA
1977-78	Land Surveyor, Robert G. Cross, L.L.S., Bearsville, NY (Ulster, Delaware and Greene Counties)

### RESEARCH INTERESTS

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- Understanding the hydrological structure and function of forest and wetland ecosystems
- Quantifying the effects of land use on streamflow and water quality
- Watershed protection and management strategies (with a focus on municipal water supplies)
- Environmental history, indigenous life ways and ecological knowledge, conservation and sustainability

### NATIONAL ACADEMIES COMMITTEES

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- Review of the New York City Watershed Protection Program (2018-2020), Chair
- Hydrologic Effects of Forest Management (2006-2008), Chair  
(Water Science and Technology Board)
- Conservation of Atlantic Salmon in Maine (2001-2004), Member  
(Board on Environmental Studies and Toxicology and Ocean Studies Board)
- Review of the New York City Watershed Management Strategy (1997-2000), Member  
(Water Science and Technology Board)

## **TEACHING PORTFOLIO**

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### *Current courses and seminars:*

- Advanced Honors Seminar: Voices of Conservation and Sustainability (15 students/yr, 2014 to present)
- Cree Culture and Sustainability (Five College Consortium, 8-10 students/year, 2011 to present)
- Forests & People (UMass, ~150 students/year, 2006-present, NRC undergraduate core course)
- Forest Resources Management (UMass, 5-15 students/year, 1998 to Fall 2018, capstone course)
- Forest and Wetland Hydrology (UMass, 20-30 students/year, 1998 to present, graduate course)

### *Earlier courses and seminars:*

- Mid-Career Training for Indian Forest Service Officers (Watershed Science and Management) in cooperation with the Indira Gandhi National Forest Academy (Dehradun), Yale University, Harvard Forest/National Science Foundation Long-Term Ecological Network, and the Massachusetts Division of Water Supply Protection (two-day module; 2006 to 2015; 30-40 participants per year)
- Advanced Honors Seminar: Forests, Water, Aquatic Ecosystems, and People (12 students, 2012, 2013)
- Land Use and Watershed Management (UMass, ~10 graduate students, 2008, 2010, 2012)
- Forest Futures, First Year Seminar (UMass, 13 students, 2009)
- Spatial Information Technologies (UMass, ~60 students/year, 1999-2003)
- Advanced Hydrology Seminar (Yale, 11 students, 1998)
- Remote Sensing and Digital Imagery (Yale, ~30 students/year, 1994-1997, with Ronald Smith)
- Introduction to Hydrologic Modeling (Yale, ~25 students/year, 1989-1993)
- Advanced Forest Hydrology (Yale, ~20 students/year, 1989-97)
- Hydrology and Water Resource Management (Yale, 60-70 students/year, 1988-1997)
- Field Applications in Forest Hydrology (Univ. of Minnesota, 45 students, 1987)
- Forest Hydrology (Univ. of Minnesota, ~100 students/year, 1986-87, assisting Kenneth N. Brooks)

## **AWARDS**

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- Excellence in Teaching, UMass Dept. of Natural Resources Conservation, 2001 and 2002
- Distinguished Commencement Speaker, Ulster County Community College, Stone Ridge, NY, 2000
- Distinguished Alumnus, Ulster County Community College, Stone Ridge, NY, 1999
- Friend of the Watershed, Quabbin Reservoir, Mass. Metropolitan District Commission, 1998
- Exceptional Advising, Yale School of Forestry and Environmental Studies, 1990
- Exceptional Teaching, Yale School of Forestry and Environmental Studies, 1989
- U.S. Army: Meritorious Service, Army Commendation, Army Achievement, and Good Conduct medals; Expert Infantryman, Parachutist, and Jungle Operations badges; Commandant's Letter of Commendation—Non-Commissioned Officer Academy, Fort Knox, KY, 1979; 3rd U.S. Infantry Regiment Non-Commissioned Officer of the Quarter (4<sup>th</sup>), 1980; Military District of Washington Non-Commissioned Officer of the Year, 1980; White House Access Clearance
- New York State Ranger School Class of 1941 Memorial Award (outstanding all-around graduate, 1977)

## **BOARDS AND EXECUTIVE COMMITTEES**

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- Great Mountain Forest Corporation, Board of Trustees, Norfolk, CT (1991-2008)
- Christ Church Cathedral Vestry (Episcopal), Springfield, Massachusetts, (1999-2008)
  - "Opening Our Doors" ADA Renovation Project Co-Chair, Construction Phase (2000-03)
  - Senior Warden (2003-08)
  - Acolyte Director and LEM (2015...)
- Massachusetts Forester Licensing Board (2001-04); Massachusetts Forestry Committee, Chair (2005-07)
- Diocese of Western Massachusetts, Camp Bement Property [sale] Committee, Chair (2009-2011)

## SCIENCE ADVISORY BOARDS AND COMMITTEES

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### Current:

- American Forests, Washington, DC  
(<http://www.americanforests.org/magazine/article/forest-hydrologist-dr-paul-barten/>)
- Massachusetts DCR Division of Water Supply Protection, Watershed Forest Management, Chair  
(<http://www.mass.gov/eea/agencies/dcr/water-res-protection/watershed-mgmt/>)

### Service Completed:

- Mistik Management, Ltd., Meadow Lake, Saskatchewan, Canada (1994-2001) (<http://www.mistik.ca/>)
- National Association of State Foresters, Water Resources Committee (*ex-officio*)
- New York City DEP and Agricultural Council Watershed Forestry, Catskill Mountain Region, NY
- New York City DEP Stream Management Program, Catskill Mountain Region, NY
- Sustainable Forest Management Network, Research Planning Committee (Scientist-at-large), National Centre of Excellence, Canada (based at the University of Alberta, Edmonton, 2003-10)
- Trust for Public Land, Source Water Protection Program, Washington, DC (1999-2005)
- Massachusetts Woodlands Cooperative, Inc., South Deerfield, MA

## PROFESSIONAL AFFILIATIONS

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- Aldo Leopold Foundation
- American Forests
- Five College Consortium—Native American and Indigenous Studies Faculty  
(<https://www.fivecolleges.edu/natam>)
- Society of American Foresters

## SELECTED PUBLICATIONS (\* = PEER-REVIEWED)

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- Barten, P.K. (in preparation). *Same Continent, Different World: Learning with the Cree of Eeyou Istchee*. (book manuscript based on Compendia of Essays, 2014-2018, and other resources)
- \*Barten, P.K. and W.R. VanDoren. (in preparation) Modeling wood availability for biomass energy generation.
- \*Berton, R., P.K. Barten, J.L. Campbell, and C.T. Driscoll. (submitted) Climate change and land use effects on streamflow discharge and timing. *Journal of Hydrology*
- \*Vose, J.M., K.L. Martin, and P.K. Barten. 2016. Applications of Forest Hydrologic Science to Watershed Management in the 21<sup>st</sup> Century. Chapter 15 in *Forest Hydrology: Processes, Management and Assessment*, D. Amatya, T. Williams, L. Bren, and C. de Jong (Editors), CABI Publishers, London, UK
- \*S. Naeem, J. C. Ingram, A. Varga, T. Agardy, P. Barten, G. Bennett, E. Bloomgarden, L. L. Bremer, P. Burkill, M. Cattau, C. Ching, M. Colby, D. C. Cook, R. Costanza, F. DeClerck, C. Freund, T. Gartner, R. Goldman-Benner, J. Gunderson, D. Jarrett, A. P. Kinzig, A. Kiss, A. Koontz, P. Kumar, J. R. Lasky, M. Masozera, D. Meyers, F. Milano, L. Naughton-Treves, E. Nichols, L. Olander, P. Olmsted, E. Perge, C. Perrings, S. Polasky, J. Potent, C. Prager, F. Quétier, K. Redford, K. Saterson<sup>†</sup>, G. Thoumi, M. T. Vargas, S. Vickerman, W. Weisser, D. Wilkie, S. Wunder. 2015. Getting the science right when paying for nature's services. *Science* 347(6227):1206-1207  
<http://www.sciencemag.org/content/347/6227/1206.summary?sid=66b2b6b6-515a-4701-ada1-28a940396ffe>
- \*Barten, P.K., C. Nicolson, W.R. VanDoren. 2013. Land cover, water resources, and prioritizing parcels. Pages 31-39 in *"Natural Infrastructure: Investing in Forested Landscapes for Source Water Protection."* Gartner, T., J. Mulligan, R. Schmidt, and J. Gunn (Editors), World Resources Institute, Washington, DC, 140 pp. <http://www.wri.org/publication/natural-infrastructure>

- Barten, P.K. [chair and principal author], M. Ashton, J. Boyce, R.T. Brooks, J. Buonaccorsi, J. Campbell, S. DeStefano, S. Jackson, M. Kelty, D. King, C.H. Sham, J. Tobiason, and M. Tyrrell., 2012. *Review of Massachusetts DWSP Watershed Forestry Program*. Massachusetts DCR Division of Water Supply Protection Science and Technical Advisory Committee. 77 pages.  
(<http://www.mass.gov/eea/docs/dcr/news/public-meetings/materials/watershed/review-of-mass-dwsp-watershed-forestry-program.pdf>)
- Barten, P.K. and W.R. VanDoren. 2012. *Wood availability for UMass Amherst Central Heating Plant fuel oil replacement project*. Dept. of Environmental Conservation, UMass Amherst, 61 pages.
- \*Brooks, K.N., P.F. Ffolliott, P. Guertin, S. Hiang, J. Nieber, S. Predmore, and P.K. Barten. 2011. Multiple resource models for peatland-upland forests of the northern Lake States. Chapter 15 in *Peatland Biogeochemistry and Watershed Hydrology at the Marcell Experimental Forest*. R. Kolka, S. Sebestyen, E.S. Verry, and K.N. Brooks (Editors), Taylor & Francis Group, CRC Press, Boca Raton, Florida, and London, UK (<https://www.crcpress.com/Peatland-Biogeochemistry-and-Watershed-Hydrology-at-the-Marcell-Experimental/Kolka-Sebestyen-Verry-Brooks/9781439814246>)
- \*Barten, P.K., and C.E. Ernst. 2010. Land Conservation and Watershed Management for Source Protection. Chapter 24 in *Sustainable Water Resources: A Compendium of Issues and Trends*. , Frederick Bloetscher (Editor), American Water Works Association, Denver, CO, pages 255-274.  
(<http://www.awwa.org/store/productdetail.aspx?productid=21718>)
- \*de la Crétaz, A.L., L.S. Fletcher, P.E. Gregory, W.R. VanDoren, and P.K. Barten. 2010. *An Assessment of the Forest Resources of Massachusetts*. University of Massachusetts Amherst and Massachusetts Department of Conservation and Recreation, 189 pages + appendix [Project Leader]  
(<http://www.mass.gov/eea/docs/dcr/stewardship/forestry/assessment-of-forest-resources.pdf>)
- Zhang, Y., and P.K. Barten, 2009. Watershed Forest Management Information System (WFMIS). *Environmental Modelling & Software* (24):569-575.
- Barten, P.K. 2009. *Från skogen till kronen: Staden New Yorks vattenförsörjning*. [From the Forest to Faucet: A Case Study of New York City's Water Supply System] Abstract in *Ekosystemtjänster – ett verktyg för hållbar utveckling*, Sven-Erik Magnusson and Alexandra Odevall (Editors), Proceedings of Ecosystem Services-A Tool for Sustainable Development, Kristianstads Vattenrike and Krinova Science Park, Kristianstad, Sweden. June 11, 2009, pages 9-10.
- \*Barnes, M.C., A.H. Todd, R. Whitney, and P.K. Barten. 2009. Forests, Water and People: Drinking Water and Forest Lands in the Northeast and Midwest United States. US Forest Service, Newtown Square, PA, NA-FR-01-08. (<http://www.na.fs.fed.us/pubs/detail.cfm?id=5257>)
- \*Zhang, Y., R. Sugumaran, P. K. Barten, and R. Kauten, 2009. Web-WMPI: a Web-based Watershed Management Spatial Decision Support System. *Environmental Management*
- Kelty, M., A. D'Amato, and P.K. Barten., 2008. Silvicultural and environmental considerations for forest biomass harvesting in Massachusetts. Mass. Division of Energy Resources, Boston, 65 pp.
- \*National Research Council., 2008. *Hydrologic Effects of a Changing Forest Landscape*. Water Science and Technology Board, National Academies Press, Washington, DC, 180 pp.  
(<http://www.nap.edu/catalog/12223/hydrologic-effects-of-a-changing-forest-landscape>)
- \*Avril L. de la Crétaz and Paul K. Barten., 2007. *Land Use Effects on Streamflow and Water Quality in the Northeastern United States*. CRC Press–Taylor & Francis Group, Boca Raton, Florida and London, 319 pp. (<https://www.crcpress.com/Land-Use-Effects-on-Streamflow-and-Water-Quality-in-the-Northeastern-United/de-la-Cretaz-Barten/9780849391873>)
- \*Ferrare, K., P.K. Barten, D. Welsch, W. Frament, and T. Luther. 2007. Best Management Practice (BMP) Manual—Desk Reference: Implementation and Effectiveness for Protection of Water Resources. USDA Forest Service NA-FR-02-07, 153 pages (<http://na.fs.fed.us/pubs/detail.cfm?id=3464>)
- Gregory, P.E., Y. Zhang, and P.K. Barten. 2007. Watershed Forest Management Information System (WFMIS) Users Guide: Version 1.0, University of Massachusetts-U.S. Forest Service Forest-to-Faucet Partnership, Amherst , MA , 87 pp.

- \*National Research Council., 2004. *Atlantic Salmon in Maine*. Environmental Studies and Toxicology and Ocean Science Boards, National Academies Press, Washington, 275 pp.  
(<http://www.nap.edu/catalog/10892/atlantic-salmon-in-maine>)
- \*Platt, R.H., P.K. Barten, and M.J. Pfeffer., 2003. *New York protège ses sources rurales pour fournir de l'eau potable à ses habitants*. [New York City protects rural sources of potable water for its residents]. *LaRevueDurable* 7: 38-41 [The Sustainability Journal], Fribourg, Switzerland.
- \*National Research Council., 2002. *Genetic Status of Atlantic Salmon in Maine*. Environmental Studies and Toxicology and Ocean Science Boards, National Academies Press, Washington, 62 pp.  
(<http://www.nap.edu/catalog/10273/genetic-status-of-atlantic-salmon-in-maine-interim-report>)
- \*Barten, P.K., D. Damery, P. Catanzaro, J. Fish, S. Campbell, A. Fabos, and L. Fish. 2001. Massachusetts Family Forests: Birth of a landowner cooperative. *Journal of Forestry* 99(3):23-30\*
- Barten, P.K., 2001. Riparian Area Management Principles and Practices: Workshop Summary Report. Saskatchewan Environment and Resources Min., Forest Ecosystems Branch, Prince Albert, 49 pp.
- \*Platt, R.H., P.K. Barten, and M.J. Pfeffer., 2000. A full, clean glass? Managing New York City's watersheds. *Environment* 42(5):8-20.
- \*National Research Council., 2000. *Watershed Management for Potable Water Supply: Assessing New York City's Approach*. Water Science and Technology Board, National Academies Press, Washington, DC, 549 pp. (<http://www.nap.edu/catalog/9677/watershed-management-for-potable-water-supply-assessing-the-new-york>)
- \*Fraser, R.H., P.K. Barten, and D.A.K. Pinney., 1998. Predicting stream pathogen loading from livestock using a GIS-based delivery model. *Journal of Environ. Quality* 27:935-945.
- \*Barten, P.K., T. Kyker-Snowman, P.J. Lyons, T. Mahlstedt, R. O'Connor, and B.A. Spencer., 1998. Managing a watershed protection forest. *Journal of Forestry* 96(8):10-15
- \*Rothrock. J.A., P.K. Barten, and G.L. Ingman., 1998. Land use, aquatic biointegrity, and management in the Blackfoot River watershed, Montana. *Journal of the American Water Resources Assoc.* 34(3):1-17.

#### **SELECTED PRESENTATIONS (Forests, Water, and People)**

- (Invited presentations) Northeast Silviculture Institute, Craftsbury, VT, May 23, 2017  
<https://vimeo.com/ondemand/132189/246711227> and <https://vimeo.com/ondemand/132189/246719819>
- (Invited presentation) *Climate Change Effects on Water Resources and Aquatic Ecosystems*. Workshop on Adapting Forested Watersheds to Climate Change, US Forest Service/Michigan Tech. University—National Institute of Applied Climate Science, Antioch University, Keene, NH, April 4, 2017
- (Invited seminar) *Forests, Water, Ecological Drought ...Climate Change and Water Supplies (?)*  
Northeast Climate Science Center Drought Workshop, May 2, 2016
- (Plenary) *Forests, Water, and People*, "Healthy Forests = Healthy Waters" Conference, American Water Resources Association, Hartford, CT, June 27, 2013
- (Plenary) *Forest Conservation and Water Supply Protection at Regional, Watershed, and Parcel Scales*. New Hampshire Source Water Protection Conference, Concord, NH, May 10, 2011
- (Keynote) *Forests, Water, People, Land Use and Climate Change*. New Hampshire Water Resources Conference, Plymouth, NH, March 26, 2011
- (Invited seminar) *Implementing Watershed Science and Management to Protect Ecosystem and Public Health*. Yale University. School of Forestry and Environmental Studies, New Haven, CT, February 8, 2010.  
(based on de la Crétaz and Barten 2007)
- (First plenary speaker) *Hydrologic Effects of a Changing Forest Landscape: Focusing on Prospects for Water Yield Augmentation*. Second International Conference on Forests and Water in a Changing Environment. Raleigh, NC, September 14, 2009
- (Keynote) *From the Forest to the Faucet: A Case Study of the New York City Water Supply System*. Ecosystem Services-A Tool for Sustainable Development, Kristianstad Vattenrike, Kristianstad, Sweden. June 11, 2009 (<http://www.vattenriket.kristianstad.se/eng/index.php>)