

## Neil Pederson, Lamont Assistant Research Professor

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Tree Ring Laboratory  
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### Education

**Ph. D.** in Forest Ecology and Climate Change (**2005**). Columbia University Department of Earth and Environment Science (DEES), New York, NY

Dissertation Title: *Climatic Sensitivity and Growth of Southern Temperate Trees in the Eastern US: Implications for the Carbon Cycle*. Dissertation Advisors: Drs. Edward Cook and Gordon Jacoby

**M. S.** in Forest Ecology (**1994**). Auburn Univ. School of Forestry and Wildlife Sciences, Auburn, AL

Thesis Title: *Stand and Spatial Age Distribution in an Old-Growth Loblolly Pine Floodplain Forest*. Thesis Advisors: Dr. Robert H. Jones and Rebecca R. Sharitz

**B. S.** in Ecosystems and Forest Biology (**1990**). S.U.N.Y. College of Environmental Science and Forestry, Syracuse, NY

**A. A. S.** in Mathematics (**1988**). SUNY Morrisville State College, Morrisville, NY

### Positions Held

2010-*present* Lamont Assistant Res. Professor, Tree-Ring Laboratory, LDEO & Columbia University  
2005-2010 Assistant Professor, Dept. Biological Sciences, Eastern Kentucky University  
1999-2005 Graduate Research Assistant, Dept. of Earth & Env. Science, Columbia University  
1997-1999 Senior Research Assistant, Tree-Ring Lab., Lamont-Doherty Earth Obs., Columbia U.  
1997 Forester, Wagner Forest Management LTD., Derby, VT  
1996-1997 Forester, USDA Forest Service - Forest Inventory and Analysis, St. Johnsbury, VT  
1994-1996 Forest Ecology Research Tech. III, J.W. Jones Ecological Research Center, Newton, GA.  
1991-1994 Grad. Research Asst., School of Forestry, Auburn University, Auburn, AL  
1990 Summer Research Asst., SUNY-ESF, Syracuse, NY & Luquillo National Forest, Puerto Rico

### Teaching Experience

2005-2010 Asst. Professor, ECU. Classes: *Intro. Biology* (non-majors), *Principles of Biology*, *Conservation of Wildlife Resources* (non-majors), *Forest Ecology*, *Topics in Ecology & Evolution*, *Ecology for Teachers*, *Ecology of Old-growth Forests*, *Dynamics of Ecosystems*.  
2001 Teaching Assist. Columbia U. Classes: *Wetlands and Climate Change*, *Life systems*.

### Peer-review Publications [*\* denotes student paper*]

#### *Disturbance Ecology*

**Pederson, N.**, J.M. Dyer, R. W. McEwan, A.E. Hessler, C. Mock, D. Orwig, H.E. Rieder, and B.I. Cook. Accepted. The legacy of episodic climatic events in shaping broadleaf-dominated forests. *Ecological Monographs*.

- McEwan, R. A., **N. Pederson**, A. Cooper, R. Watts, and A. Hruska. 2013. Fire and gap dynamics over 300 years in an old-growth temperate forest. *Applied Vegetation Science* DOI: 10.1111/avsc.12060.
- \*Cooper, A. and **N. Pederson**. In revision. Age, forest structure, and disturbance history of five old forests in eastern Kentucky. *Natural Areas Journal*.
- Druckenbrod, D.L., **N. Pederson**, J. Rentch, and E.R. Cook. 2013. A comparison of times series approaches for dendroecological reconstructions of past canopy disturbance events. *Forest Ecology and Management* 302: 23-33.
- \*Saladyga, T., A. Hessler, B. Nachin, and **N. Pederson**. 2013. Privatization, drought, and fire exclusion in the Tuul River watershed, Mongolia. *Ecosystems* DOI: 10.1007/s10021-013-9673-0.
- \*Cooper, A. and **N. Pederson**. In revision. Age, forest structure, and disturbance history of five old forests in eastern Kentucky. *Natural Areas Journal*.
- \*Douglas, D., D. Brown, and **N. Pederson**. 2013. Land snail diversity can reflect degrees of anthropogenic disturbance. *Ecosphere* 4:art28, DOI: 10.1890/ES12-00361.1.
- Hessler, A. and **N. Pederson**. 2013. Hemlock Legacy Project (HeLP): a paleoecological requiem for eastern hemlock. *Progress in Physical Geography* 36: 1-16.
- Esper, J., M. Nenz, and **N. Pederson**. 2012. Influence of wood harvest on tree-ring time-series of *Picea abies* in a temperate forest. *Forest Ecology and Management* 284: 86–92  
<http://dx.doi.org/10.1016/j.foreco.2012.07.047>.
- Hessler, A.E., P. Brown, U. Ariya, O. Byambasuren, T. Green, G. Jacoby, E. Sutherland, B. Nachin, R. Maxwell, **N. Pederson**, L. De Grandpré, T. Saladyga, and J. C. Tardif. **2012**. Report on fire history in central Mongolia *International Journal of Wildland Fire*. <http://dx.doi.org/10.1071/WF10108>
- McEwan, R. W., J.M. Dyer and **N. Pederson**. 2011. Multiple interacting ecosystem drivers: toward an encompassing hypothesis of oak forest dynamics across eastern North America. *Ecography* 34: 244-256 doi: 10.1111/j.1600-0587.2010.06390.x.
- Pederson**, N., J.M. Varner and B.J. Palik. 2008. Canopy disturbance and tree recruitment over two centuries in a managed longleaf pine landscape. *Forest Ecology and Management* 254: 85-95.
- Pederson**, N., R.H. Jones, and R.R. Sharitz. **1997**. Age structure of old-growth loblolly pine stands in a floodplain forest. *J. Torrey Bot. Soc.* 124(2): 111-123.
- Palik, B.J., R.J. Mitchell, G. Houseal, and **N. Pederson**. **1997**. Competitive effects of overstory structure and seedling response in a longleaf pine woodland ecosystem. *Can. J. For. Res.* 27(9): 1458-1464.
- Palik, B.J. and **N. Pederson**. **1996**. Overstory mortality and canopy disturbances in longleaf pine ecosystems. *Can. J. For. Res.* 26(11): 2035-2047.

### ***Tree & Forest Sensitivity to Climate***

- Martin-Benito, D. and **N. Pederson**. In prep. Convergence in drought stress, but divergence in heat stress across a latitudinal gradient in a temperate broadleaf forest.
- Liang, E., B. Dawadi, **N. Pederson**, and D. Eckstein. Accepted. Is the growth of birch at the upper treeline in the Himalayas limited by moisture or by temperature? *Ecology*.
- \*Riddle, J., **N. Pederson**, J. C. Stella, D. J. Leopold. Accepted. Shifting climate sensitivity and contrasting growth trends in *Juniperus* species growing together at opposite range margins. *Tree Ring Research*.
- Poulter, B., **N. Pederson**, H. Liu, Z. Zhu, R. D'Arrigo, P. Ciais, N. Davi, D. Frank, C. Leland, R. Myneni, S. Piao, and T Wang. 2013. Recent trends in Inner Asian forest dynamics to temperature and precipitation indicate high sensitivity to climate change. *Agricultural and Forest Meteorology* 178-179: 31-45.

- Li, Z., G. Liu, B. Fu, Q. Zhang, K. Ma, and **N. Pederson**. 2013. The growth-ring variations of alpine shrub *Rhododendron przewalskii* reflect regional climate signals in the alpine environment of Miyaluo Town in Western Sichuan Province, China. *Acta Ecologica Sinica* 33:23-31
- Pederson, N.**, K. Tackett, R. W. McEwan, S. Clark, A. Cooper, G. Brosi, R. Eaton, and R. D. Stockwell. 2012. Long-term drought sensitivity of trees in second-growth forests in a humid region. *Canadian Journal of Forest Research*. 42: 1837-1850.
- De Grandpré, L., J.C. Tardif, A. Hessler, **N. Pederson**, F. Conciatori, T.R. Green, O. Byambasuren and B. Nachin. 2011. Climate signals in *Pinus siberica*, *Pinus sylvestris* and *Larix sibirica* tree-ring chronologies from north-central Mongolia: change in climate sensitivity. *Can. J Forest Research* 41: 1242-1255 doi:10.1139/X11-051.
- Bhuta, A.R., L.M. Kennedy and **N. Pederson**. 2009. Climate-radial growth relationships of northern latitude range margin Longleaf pine (*Pinus palustris* P. Mill) in the Atlantic Coastal Plain of southeastern Virginia. *Tree ring Research* 65: 105-115.
- \*Hopton, H.M. and **N. Pederson**. 2005. Climate Sensitivity of Atlantic White Cedar at Its Northern Range Limit. *Atlantic White Cedar: Ecology, Restoration and Management, Proceedings of the Arlington Echo Symposium*. June 2-4 2003. Millersville, MD. USDA For. Ser. Gen. Tech. Rep. SRS-91. pp 22-30. \*Student paper.
- Pederson, N.**, E.R. Cook, G.C. Jacoby, D.M. Peteet, and K.L. Griffin. 2004. The influence of winter temperatures on the annual radial growth of six northern-range-margin tree species. *Dendrochronologia* 22: 7-29.
- Meldahl, R.S., **N. Pederson**, J.S. Kush, and J.M. Varner, III. 1999. Dendrochronological investigations of climate and competitive effects on longleaf pine growth. In R. Wimmer and R E Vetter (eds.) *Tree Ring Analysis: Biological, Methodological and Environmental Aspects*. CABI Pub. Wallingford, UK. pp. 265-285.

### ***Climatic Reconstructions & Regional Climate***

- Pederson, N.**, A.E. Hessler, B. Nachin, and K.J. Anchukaitis. Accepted. Pluvials, droughts, the Mongol Empire, and Modern Mongolia. *Proceedings of the National Academy of Sciences*.
- \*Leland, C., **N. Pederson**, A. Hessler, B. Nachin, N. Davi, R. D. D'Arrigo, and G. Jacoby. 2013. A hydroclimatic regionalization of central Mongolia as inferred from tree rings. *Dendrochronologia* 31: 205-215.
- Pederson, N.**, A.R. Bell, E.R. Cook, U. Lall, N. Devineni, R. Seager, K. Eggleston and K.J. Vranes. 2013. Is an Epic Pluvial Masking the Water Insecurity of the Greater New York City Region? *Journal of Climate*. 26: 1339–1354. DOI 10.1175/JCLI-D-11-00723.1.
- Devineni, N., U. Lall, **N. Pederson**, and E.R. Cook. 2013. Delaware River Streamflow Reconstruction using Tree Rings: Exploration of Hierarchical Bayesian Regression. *Journal of Climate*. DOI 10.1175/JCLI-D-11-00675.1.
- Pederson, N.**, C. Leland, B. Nachin, A. Hessler, A.R. Bell, D. Martin-Benito, T. Saladyga, B. Suran, P.M. Brown, and N.K. Davi. 2013. Three Centuries of Shifting Hydroclimatic Regimes Across the Mongolian Breadbasket. *Agricultural and Forest Meteorology* 178-179: 10-20.
- Davi, N., **N. Pederson**, C. Leland, B. Nachin, B. Suran, and G. Jacoby. 2013. Is eastern Mongolia drying? A long-term perspective of a multi-decadal trend. *Water Research Resources*. DOI 10.1029/2012WR011834.

- Seager, R., **N. Pederson**, Y. Kushnir, J. Nakamura, and S. Jurburg. 2012. The 1960s drought and the subsequent shift to a wetter climate in the Catskill Mountains region of the New York City watershed. *Journal of Climate* 25: 3355-3372
- Pederson**, N., A.R. Bell, T.A. Knight, C. Leland, N. Malcomb, K.J. Anchukaitis, K. Tackett, J. Scheff, A. Brice, B. Catron, W. Blozan, and J. Riddle. 2012. A long-term perspective on a modern drought in the American Southeast. *Environmental Research Letters*. 7 014034.
- Maxwell, R. S., A. E. Hessler, E. R. Cook, and **N. Pederson**. 2011. A multispecies tree ring reconstruction of Potomac River streamflow (950–2001). *Water Resour. Res.* 47: W05512, doi:10.1029/2010WR010019.
- Jacoby, G., N. **Pederson** and R. D'Arrigo. **2003**. Temperature and precipitation in Mongolia based on dendroclimatic investigations. *Chinese Science Bulletin* 48 (14): 1474-1479.
- Pederson**, N., G.C. Jacoby, R. D'Arrigo, B. Buckley, C. Dugarjav, and R. Mijiddorj. **2001**. Hydrometeorological Reconstructions for Northeastern Mongolia Derived from Tree Rings: AD 1651-1995. *J. Clim.* 14: 872-881.
- D'Arrigo, R., G. Jacoby, D. Frank, N. **Pederson**. **2001**. Spatial response to major volcanic events on or about AD 536, 934 and 1258: frost rings and other dendrochronological evidence from Mongolia. *Climatic Change* 49: 239-246.
- D'Arrigo, R., G. Jacoby, D. Frank, N. **Pederson**, B. Buckley, B. Nachin, R. Mijiddorj and C. Dugarjav. **2001**. 1738 years of Mongolian temperature variability inferred from a tree-ring width chronology of Siberian pine. *Geophys. Res. Lett.* 28: 543-546.
- D'Arrigo, R., G. Jacoby, N. **Pederson**, D. Frank, B. Buckley, B. Nachin, R. Mijiddorj and C. Dugarjav. **2000**. Mongolian Tree Rings, Temperature Sensitivity and Reconstructions of Northern Hemisphere Temperature. *The Holocene* 10 (6): 669-672.

### ***Life History Traits & Plant Physiology***

- Carbone, M.S., C.I. Czimczik, T.F. Keenan, P.F. Murakami, **N. Pederson**, P.G. Schaberg, X. Xu, A.D. Richardson. 2013. Age, allocation, and availability of nonstructural carbon in mature red maple trees. *New Phytologist* 200: 1145-1155.
- Pederson**, N. **2010**. External Characteristics of Old Trees in the Eastern Deciduous Forest. *Natural Areas Journal* 30: 396-407.
- Black, B.A., J.J. Colbert and **N. Pederson**. **2008**. Relationships between radial growth rates and lifespan within diverse tree species. *Ecoscience* 15(3): 349-357.
- Pederson**, N., A.W. D'Amato and D.A. Orwig. **2007**. Central hardwood natural history from dendrochronology: maximum ages of rarely studied species. Proc. 15th Central Hardwood Conference. University of Tennessee. Knoxville, TN. Feb. 27–Mar. 1, 2006. USDA For. Ser. So. Res. St. e-Gen. Tech. Rep. SRS-101. pp 695-701.

### ***Other***

- Martin-Benito, D., N. **Pederson**, M. McDonald, B. Buckley, P. Krusic, K. Anchukaitis, R. D'Arrigo, L. Andreu-Hayles, and E. Cook. Accepted. Dendrochronological dating of the World Trade Center ship, Lower Manhattan, New York City.
- Sun, G., S. McLaughlin, J. Porter, J. Uddling, P.J. Mulholland, M.B. Adams, and N. **Pederson**. 2012. Interactive Influences of Ozone and Climate on Streamflow of Forested Watersheds. *Global Change Biology*. DOI 10.1111/j.1365-2486.2012.02787.x.

Cook, E.R. and N. **Pederson**. **2011**. Uncertainty, emergence, and statistics in dendrochronology. In: M.K. Hughes, T.W. Swetnam, and H.F. Diaz (eds), *Dendroclimatology: Progress and Prospects, Developments in Paleoecological Research* 11(2): 77-112.

### Proceedings Edited

Barclay, D., C. Griggs, N. **Pederson**, and J. Rayburn (eds.). In process. *Dendrochronology of New York State*. Special issue of *Tree Ring Research*.

Jacoby, G.C. and N. **Pederson** (eds.) **2001**. *Proceedings of the Meeting on Mongolian Paleoclimatology and Environmental Research*, Lamont-Doherty Earth Obs., Palisades, NY, 113 p.

### Selected Unrefereed Articles & Reports

\*Seim, A.M. S.D. Merry, N. **Pederson** and R.B. Atkinson. **2006**. The effect of temperature on the growth of Atlantic white cedar in two mid-Atlantic national wildlife refuges. *Hydrology and Management of Forested Wetlands Proceedings of the International Conference 8-12 April 2006* Publication Date 8 April 2006 701P0406. *\*student paper*

**Pederson**, N., J.S. Kush, R.S. Meldahl, and W.D. Boyer. **2000**. Longleaf pine cone crops and climate: a possible link. *Proceedings of the Tenth Biennial Southern Silvicultural Research Conference*, February 1999.

**Pederson**, N., L. Neel, and J. Kush. **1997**. Ecosystem management ideas for the longleaf pine ecosystem. *First Annual Meeting of the Longleaf Pine Alliance*. September 1996. Mobile, AL.

**Pederson**, N., E. Everham, and J.M. Sahn. **1991**. Natural disturbance simulation for the Luquillo Experimental Forest. In: *Concern Toward Our Environment*. Proc. of the Computer Simulation Soc.

### Research Funding & Grants

#### Current

2013	\$5,113,060	'Collaborative Research and NEON: MSB Category 2: PalEON - a PaleoEcological Observatory Network to Assess Terrestrial Ecosystem Models. MacLachlan, J. (UND) (PI), M. Dietze, (BU), J. Williams (UWI), et al... (Co-PIs). <i>NSF</i> ; \$441,856 to Pederson.
2013	\$447,183	'Collaborative Research: P2C2--Recent Northeastern United States Temperature Records in the Context of the Late Holocene'. Anchukaitis, K. (WHOI) (PI), J. Donnelly, (WHOI), N. Pederson (LDEO), (Co-PIs). <i>NSF</i> ; \$182,817 to Pederson.
2012	\$1,394,398	'CHN: Pluvials, Droughts, Energetics, and the Mongol Empire'. Hessler, A.E. (WVU) PI, N. Pederson (LDEO), N. Di Cosmo (Inst. Adv. Studies), H. Tian (Auburn U.), B. Nachin (National Univ. Mongolia), (Co-PIs). <i>NSF</i> ; \$317,576 to Pederson.
2012	\$9,080	'Climate reconstruction from tree-rings from broadleaved species from old-growth temperate rainforests in Northeast Turkey'. D. Martin and N. Pederson. LDEO Climate Center.
2012	\$ 29,230	'Pluvials, Droughts, Energetics, and the Mongol Empire'. A.E. Hessler, Pederson, N. and B. Nachin. <i>National Geographic Society</i> .
2011	\$ 8,086	'Annual climate during the rise and fall of the Great Mongol Empire: Rapid collection of an ancient and endangered paleoclimate resource'. Pederson, N. and K.J. Anchukaitis. <i>LDEO Climate Center</i> .
2010	\$133,126	'Use Of Long Term Experimental Forest Provenance Trials for Selection of Future Forests: Tools to Predict Forest Adaptation to Climate Change'. Co-PI with E. R. Cook. <i>USDA Forest Service</i> .

## **Completed**

2008	\$569,754	'Collaborative Research: Fire, Climate and Forest History in Mongolia'. <i>National Science Foundation</i> . In collaboration with Dr. Amy Hessl of West Virginia University and Dr. Peter Brown of Rocky Mountain Tree Ring Research [\$378,616 to Pederson].
2010	\$ 12,306	'Dating The World Trade Center Ship'. With B.M. Buckley, E. R. Cook, K.J. Anchukaitis and R. D'Arrigo. <i>AKRF group</i> .
2006	\$ 18,422	'Dendroecology of Nonleucobalanus Trees in a Managed Forest: A Baseline Dataset for Forest Management In An Altered Climate'. <i>U.S. Forest Service – Southern Research Station</i> .
2006	\$ 11,161	'A Pilot Study of Individual-tree and Ecosystem Level Carbon Sequestration in High and Low Elevation, Mixed-Mesophytic Forests of the Great Smoky Mountains'. <i>University Research Committee. Eastern Kentucky University</i> .
2006	\$ 4,965	'Drought History of Three Ponds and Blanton Forest Preserves: Investigation of an East-West Drought Gradient across Kentucky'. <i>Kentucky Nature Preserves Commission</i> .
2005	\$ 26,841	'Using dendrochronology to confirm old-growth forest, and reconstruct climatic and hydrologic sensitivity of Atlantic white-cedar at the Buckridge Coastal Reserve, NC'. <i>North Carolina Dept. of Coastal Management, (w/ Dr. B Poulter, Duke University)</i> .
2002	\$ 6,000	'Dendrochronological Analysis of Suwannee River Basin Tree Species', <i>Suwannee River Water Management District, Florida (w/ J.M. Varner, III)</i>
2001	\$ 57,600	'An Experimental Study to Explore the Relationship of Ecosystem Carbon Uptake Eddy-Flux Measurements and Tree Growth: A Tree-Ring Analysis Approach', <i>U.S. Dept. of Energy. Global Change Education Program, Fellowship</i> .
2000	\$ 4,175	'Age Model Constraint of a Northern Hudson River Valley Bog Sediment Core', <i>Climate Center of Lamont-Doherty Earth Observatory, (w/ Dr. Dorothy Peteet)</i> .
2000	\$ 21,000	'High Resolution Millennial Scale History of Hudson Valley, NY Forests: Climatic and Environmental Influences on Carbon Storage', <i>NASA Earth System Science Fellowship Program, (w/ Dr. Dorothy Peteet)</i> .
2000	\$ 5,000	'Miniconference on Mongolian Paleoclimatology and Environmental Research', <i>Climate Center of Lamont-Doherty Earth Observatory, (w/ Dr. Gordon Jacoby)</i> .
1992	\$ 5,000	'Disturbance history and establishment of loblolly pine in the Congaree Swamp. <i>U.S. National Park Service Research Grant, (w/ Dr. Robert H. Jones)</i> .

## **Honors and Awards**

2003- 2005	Sigma Xi National Scientific Research Society
2001- 2002	Teaching Assistant Of the Year, Dept. of Earth & Env. Science, Columbia U.
2000	Young Scientist Travel Scholarship, World Dendro Conference. Mendoza, Argentina.
1992	Xi Sigma Pi - Forestry National Honor Society
1988	N.J.C.A.A. Academic All-American in Lacrosse

## **Thesis and Dissertation Advisors**

E.R. Cook, Lamont-Doherty Earth Observatory, Columbia University (PhD)

G.C. Jacoby, Lamont-Doherty Earth Observatory, Columbia University (PhD)  
D. Peteet, Lamont-Doherty Earth Observatory, Columbia University (PhD)  
Kevin Griffin, Lamont-Doherty Earth Observatory, Columbia University (PhD)  
R.H. Jones, West Virginia University (MS)  
R.R. Sharitz, Savannah River Ecology Laboratory, University of Georgia (MS)

**Advisees** (total since 2005 – 21; 11 female; 7 graduated in 2011)

H.M. Hopton, Columbia University, (undergrad thesis), May 2005  
S. Merry, Christopher Newport University, (MS thesis committee), 2005  
A. Seim-Blasko, Christopher Newport University, (MS thesis committee), 2005  
T. Blythe, Eastern Kentucky University, (undergrad honors thesis), May 2008  
B. Slack, Eastern Kentucky University, (MS thesis committee), Dec 2009  
T. Evans, Eastern Kentucky University, (MS thesis committee), July 2010  
J. Riddle, SUNY-College of Environmental Science & Forestry, (MS thesis committee) Mar 2011  
A. Cooper, Eastern Kentucky University, (MS thesis) May 2011  
D. Douglas, Eastern Kentucky University, (MS thesis) May 2011  
R. Ribbons, University of Massachusetts, (MS thesis committee) July 2011  
C. Leland, West Virginia University, (MS thesis) Aug 2011  
T. Saladyga, West Virginia University, (Ph.D. thesis committee) Aug 2011  
A. Bhuta, Virginia Polytechnic Inst. & State Univ., (Ph.D. thesis committee) Dec 2011  
K. Tackett, Eastern Kentucky University (MS), Mar 2012  
R. J. Scheff, Eastern Kentucky University (MS), Oct 2012  
J. Testani, Columbia University (undergraduate), May 2013  
D. Bishop, SUNY-College of Environmental Science & Forestry, (MS thesis committee) current  
T. James, Yale University (Ph.D. thesis committee), current  
C. Leland, Columbia University, (Ph.D. thesis advisor), current  
A.C. Gonzalez, Columbia University (undergraduate), current

**Synergistic Activities**

Co-organizer, Organized oral session at ESA Annual Meeting 2010. *“Reconstruction of Climate, Fire, and Forest Dynamics in Eastern North America via Dendroecology; Gleaning New Perspective from Ancient Trees.”*

Developed & manages EasternOLDLIST: A Database of Maximum Tree Ages for Eastern North American Tree Species: <http://people.eku.edu/pedersonn/OLDLISTeast/>

Co-convened conference on Status and Ecology of Old-growth Forests in Kentucky (2007): <http://people.eku.edu/pedersonn/kyOGentsmeet.html>

Co-Teacher: North American Dendroecological Fieldweek, Great Smoky Mountains National Park, Tremont, TN (2007)

Co-Teacher: International Dendroecological Fieldweek, Ulaanbaatar, Mongolia (2006)

Co-organized & taught the First Dendrochronological Fieldweek, Ulaanbaatar, Mongolia (2000)

Co-convened conference on Mongolian Paleoclimate and Environment at LDEO (2000)

**Data Bank Contributions**

2012 **Pederson, N.**, et al. **56** tree ring record contributions to the International Tree Ring Data Bank.

2012 **Pederson, N.**, et al. 2012. New York City 472-Year PDSI Reconstruction. IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series # 2012-149. NOAA/NCDC

- Paleoclimatology Program, Boulder CO, USA.
- 2012 **Pederson, N.**, et al. 2012. Yeruu River, Mongolia 300 Year Streamflow Reconstruction. IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series # 13542. NOAA/NCDC Paleoclimatology Program, Boulder CO, USA.
- 2012 **Pederson, N.**, et al. 2012. Southeastern United States 346 Year PDSI Reconstruction. IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series # 2012-060. NOAA/NCDC Paleoclimatology Program, Boulder CO, USA.
- 2009 - **Pederson, N.**, D. Griffin, J. Riddle. Tree-Ring Data from Savage Gulf State Natural Area, TN. International Tree-Ring Data Bank. IGBP PAGES/World Data Center-A for Paleoclimatology Data Contribution Series to TN029. NOAA/NGDC Paleoclimatology Program. Boulder, CO, USA.
- 2007 - **Pederson, N.**, et al. Oldest-known *Liriodendron tulipifera*. Oldlist: A Database of Maximum Tree Ages - <http://www.rmtrr.org/oldlist.htm>.
- 2005 - **Pederson, N.**, et al. Oldest-known *Acer rubrum*, *Betula lenta*, *Carya ovata*, *Liriodendron tulipifera*, *Magnolia acuminata*, *Quercus alba* and *Q. montana*. Oldlist: A Database of Maximum Tree Ages - <http://www.rmtrr.org/oldlist.htm>.
- 1999 - Jacoby, G.C., R. D'Arrigo, B.M. Buckley, N. **Pederson**. Tree-Ring Data from Mongolia. International Tree-Ring Data Bank. IGBP PAGES/World Data Center-A for Paleoclimatology Data Contribution Series to MONG004. NOAA/NGDC Paleoclimatology Program. Boulder, CO, USA.
- 1999 - **Pederson, N.**, B.M. Buckley, B.Nachin and G.C. Jacoby. Oldest-known *Larix sibirica* - Siberian larch. Oldlist: A Database of Maximum Tree Ages - <http://www.rmtrr.org/oldlist.htm>
- 1997 - **Pederson, N.** Tree-Ring Data, Georgia Longleaf Pine. International Tree-Ring Data Bank. IGBP PAGES/World Data Center-A for Paleoclimatology Data Contribution Series # 97-003. NOAA/NGDC Paleoclimatology Program. Boulder, CO, USA.

## Educational Outreach

### Blogs

**The Broadleaf Papers:** <http://blogs.ei.columbia.edu/tag/the-broadleaf-papers/> - on Columbia University's State of The Planet Blog.

**Mongolian Climate, Ecology, & Culture:** <http://mongolianecologyculture.wordpress.com/> - Blog developed to report on progress for NSF-sponsored research in Mongolia.

### Newsletter Articles

- Pederson, N.** 2012. Pederson, N. 2012. Tall Tree Tales: Meet the Beast of Broadleaf Longevity. In: The Lady Slipper - newsletter of the Kentucky Native Plant Society. Summer 2012.
- Pederson, N.** and Amy Hessel. 2011. Tall Tree Tales: Farewell, For Now, To a Loyal Arboreal Friend. In: The Lady Slipper - newsletter of the Kentucky Native Plant Society. Winter 2011.
- Pederson, N.**, Bob Leverett, Will Blozan, Jess Riddle and Josh Kelly. 2011. Tall Tree Tales: Tulip-Poplar: Douglas-Fir of the East? In: The Lady Slipper - newsletter of the Kentucky Native Plant Society. Summer 2011.
- McEwan, R. and **N. Pederson**. 2010. Tall Tree Tales: FIRE!!! In: The Lady Slipper - newsletter of the Kentucky Native Plant Society. Winter 2010.
- Pederson, N.** and R. McEwan. 2010. Tall Tree Tales: Those Magnolias. In: The Lady Slipper - newsletter of the Kentucky Native Plant Society. Fall 2010.

- McEwan, R. and **N. Pederson**. N. Pederson. 2010. Tall Tree Tales: Three odd and elegant denizens of the Bluegrass Region. In: The Lady Slipper - newsletter of the Kentucky Native Plant Society. Summer 2010.
- Pederson, N.** and R. McEwan. 2010. Tall Tree Tales: Characteristics of Old Trees. In: The Lady Slipper - newsletter of the Kentucky Native Plant Society. Spring 2010.
- Pederson, N.** 2009. Old Trees in the Inner Bluegrass Region of Kentucky: November 2008. Bulletin of the Eastern Native Society. 4(1): 9-10.
- Pederson, N.** 2009. Floracliff's Old Trees: Rays of hope for the Inner Bluegrass Region. Newsletter of Floracliff Nature Sanctuary. Winter 2009.
- Pederson, N.** 2008. Ring width patterns of a chestnut oak (*Quercus montana*) from Lilley Cornett Woods, KY: An example of accelerated growth in old trees across the eastern US - A brief overview of a sample for the paleoclimate exhibit of the American Museum of Natural History. In: The Lady Slipper - newsletter of the Kentucky Native Plant Society. Summer 2008.

### **Selected Presentations Since '06**

- Pederson, N.**, et al. 2013. Regional-scale Dynamics in Humid, Late-Holocene Broadleaf Forests. 4<sup>th</sup> PAGES Open Science Meeting, February 13-16, 2013. Goa, India. Talk.
- Pederson, N.** 2013. Regional-scale dynamics in a gap-dominated forest. Center for Dendrochronology, University of Minnesota, Feb 1, 2013. Invited talk.
- Pederson, N.** 2013. The Science of History: Tree Rings and the History They Reveal. Invited talk to celebrate Tu B'shevat for Bruce Museum, Greenwich Historical Society, Greenwich Reform Synagogue, Greenwich Tree Society. Jan. 24, 2013. Greenwich Historical Society's Vanderbilt Education Center, Cos Cob, CT.
- Pederson, N.**, et al.. 2012. A Black Swan and Sub-continental Scale Dynamics in Humid, Late-Holocene Broadleaf Forests. American Geophysical Union Fall Meeting, 3-7 December, San Francisco, CA. Talk
- Hessl, A., **N. Pederson**, and B. Nachin. 2012. Pluvials, Droughts, Energetics, and the Mongol Empire. American Geophysical Union Fall Meeting, 3-7 December, San Francisco, CA.
- Leland, C., **N. Pederson**, B. Nachin, A. Hessl, N. Davi, A.R. Bell, D. Martin-Benito, T. Saladyga, P. M. Brown, B. Suran. 2012. Hydroclimatic Variability Across Mongolia's Breadbasket and Implications for Water Resource Management. American Geophysical Union Fall Meeting, 3-7 December, San Francisco, CA. Student presentation.
- Davi, N., A. Curtis, **N. Pederson**, C. Leland, R. D'Arrigo. 2012. Climate-Induced Disasters in the Livestock Sector in Mongolia: Reconstruction and Dynamical Insights. American Geophysical Union Fall Meeting, 3-7 December, San Francisco, CA.
- Poulter, B., **N. Pederson**, H. Liu, Z. Zhu, R. D'Arrigo, P. Ciais, N. Davi, D. Frank, C. Leland, R. Myneni, S. Piao, T. Wang. 2012. Recent trends in Inner Asian forest dynamics to temperature and precipitation indicate high sensitivity to climate change. American Geophysical Union Fall Meeting, 3-7 December, San Francisco, CA.
- Suran, B., P. M. Brown, B. Nachin, A. E. Hessl and **N. Pederson**. 2012. Forest fire history of northeastern Mongolia. 5<sup>th</sup> International Fire Ecology and Management Conference. 3-7 December, Portland, OR. Student presentation.
- Davi, N., B. Lyon, R. D'Arrigo, **N. Pederson**, C. Leland, A. Seim. 2012. Recurrent and Anomalous Circulation Patterns Associated with Mongolian Summertime Rainfall Variability and "Dzud" Events. NOAA's 37th Climate Diagnostics and Prediction Workshop, 22-25 October 2012, Fort Collins, CO.

- Pederson, N; et al. 2012. Episodic Recruitment at Regional and Sub-continental Scales in Gap Dynamic Forests. 4<sup>th</sup> International EcoSummit. Columbus, OH. October, 2012. Invited talk
- Pederson, N. 2012. Seeing the Mesophytic Forest for the Trees: climate and forests in the eastern US. SUNY- College of Environmental Science and Forestry Adaptive Peaks seminar series. Mar 8, 2012. Invited.
- Druckenbrod, D; Pederson, N; Cook, E; Rentch, J; 2012. A comparison of times series approaches for identifying past canopy disturbance events from tree-ring widths. Annual meeting of the American Association of Geographers. NYC. February 27, 2012.
- Leland, C; Pederson, N; Hessler, A; Davi, N; Nachin, B; 2012. Comparing hydroclimatic regions in north-central Mongolia using a tree-ring network. Annual meeting of the American Association of Geographers. NYC. February 27, 2012. [student presentation].
- Hessler, A; Pederson, N; Brown, P; Nachin, B; Saladyga, T; Suran, B; 2012. Throwing a Wet Blanket on Megafires: How Might Fire Regimes Really Respond to Climate Change? Annual meeting of the American Association of Geographers. NYC. February 27, 2012.
- Pederson, N; et al. 2012. On the necessity of cross-dating tree-ring records: the scared straight edition. Annual meeting of the American Association of Geographers. NYC. February 27, 2012.
- Pederson, N; 2011. Droughts, Pluvials and Long-term Changes in Temperate Forests. Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang, China. October 17, 2011. Invited.
- Pederson, N; 2011. Trees: Environmental Historians for the Ages. Qingyuan Secondary Forest Ecosystem Ecological Station. Institute of Applied Ecology, Chinese Academy of Sciences. Qingyuan, China. Invited.
- Suran, B; Brown, P; Nachin, B; Pederson, N; Hessler, A; Saladyga, T; Leland, C; 2011. Fire history in scots pine forests of northeast Mongolia. 2nd Asian Dendrochronological Conference. Xi'an, China. August 19-23. [student paper].
- Leland, C; Pederson, N; Davi, N; Hessler, A; 2011. Assessment of Hydroclimatic Regions across North-central Mongolia as Inferred from Tree-rings. 2nd Asian Dendrochronological Conference. Xi'an, China. August 19-23. [student paper]
- Davi, N; Pederson, N; Leland, C; Suran, B; 2011. Is eastern Mongolia drying? 2nd Asian Dendrochronological Conference. Xi'an, China. August 19-23.
- Pederson, N. 2011. A Not-So Temperate Environment and How it Affects Forests (and People, too). SUNY-Cortland. Cortland, NY. April 2011.
- Pederson, N. 2011. Ancient Trees Reveal a Not-So Temperate Environment. Swiss Federal Institute for Forest, Snow and Landscape. Zurich, Switzerland. April 2011.
- Pederson, N., E.R. Cook, G. Jacoby and H.M. Hopton. 2011. *Invited*. The Influence of Age and Geography on the Climatic Sensitivity and Growth Rates of Southern Temperate Tree Species. Annual meeting of the European Geophysical Union. Vienna, Austria. April 2011.
- Pederson, N., E.R. Cook and K. Vranes. 2011. Neither New York City nor Atlanta are Prepared for a Return to Historical Drought. American Geophysical Union Chapman Conference on Climates, Past Landscapes, and Civilizations. Santa Fe, NM. Mar. 2011. [poster].
- Pederson, N. 2010. Ancient Trees and the New Histories They Reveal. **LDEO Public Lecture series**. March 2011.
- Pederson, N. 2010. *Invited*. Spidey Sense? Bah! Sensitive Trees and the Environmental Histories They Reveal. **Dept. of Earth & Env Sciences Noon Balloon Seminar Series**. Columbia University, January 2011.

- Pederson, N., E.R. Cook and K. Vranes. 2010. The Paleoclimatological Power of Biodiversity: 500 yrs of New York City Watershed Drought. Annual Meeting of the American Geophysical Union. San Francisco, CA. Dec. 2010.
- Pederson, N. 2010. *Invited*. Old Trees and the New Histories They Reveal. Eastern Native Tree Society Annual Forest Summit. Holyoke, MA. October 2010.
- Pederson, N. 2010. Old Trees and the New Histories They Reveal. **LDEO Biology & PaleoEnvironments Seminar series**. October 2010.
- Pederson, N. 2010. *Invited*. Climate, Fire & Fire History in Mongolia. National University of Mongolia. September. Department of Forestry.
- Pederson, N. 2010. Evidence of synchronous, regional-scale canopy accession in the heart of the Eastern Deciduous Forest. Annual Meeting of the Ecological Society of America. Pittsburgh, PA. August 2010.
- Tomko, N.D. and E.E. Pyland. 2009. Two Uncommonly Climate-Sensitive Tree Populations in a Warm, Moist Geographic Location. Undergraduate Presentation Showcase. EKU. April 10<sup>th</sup>, 2009.
- Pederson, N. 2009. Was there a Megadrought in eastern Kentucky during the mid-1700s? Annual meeting of the Kentucky Wildlife Society. February, Barren River State Park. Invited Talk.
- Eaton, R., G. Brosi, D. Stockwell and N. Pederson. 2008. Development of a 313-year *Quercus montana* chronology in Powell County, Kentucky. Annual Meeting of the Kentucky Academy of Sciences, Lexington, KY, November, 2008.
- Pederson, N. 2008. Forest Trees: Arboreal Agents of Environmental Change. University of Dayton Department of Biology Seminar Series. Invited Seminar.
- Pederson, N. 2008. The Paleoclimatological Power of Biodiversity: Drought Bakes the NYC Apple & is a Boon for Mr. Daniel? Dept. Bio. Science Departmental Seminar Series, Eastern Kentucky U.
- Pederson, N., T. Evans, and K. Tackett. 2008. Images of a death spiral: Decline of hemlock woolly-adelgid infected trees. University of Kentucky's Annual Spring Symposium. May 9th.
- Tackett, K. N. Pederson and S. Clark. 2008. Age structure of two hemlock-dominated ravines and adjacent upland oak-hardwood forests within the Cumberland Plateau Region. Annual Meeting of the Association of Southeastern Biologists. April 16-19, 2008. Spartanburg, SC.
- Evans, T., T. Blythe, C. Lattin, K. Tackett and N. Pederson. 2008. Effects of Climate and Geography on the Radial Growth of Seven Eastern Tree Species. Annual Meeting of the Association of Southeastern Biologists. April 16-19, 2008. Spartanburg, SC.
- Pederson, N., E.R. Cook and K. Vranes. 2008. The Paleoclimatological Power of Biodiversity: 500 yrs of New York City Watershed Drought. Annual Meeting of the Association of American Geographers. April 15-19, 2008. Boston, MA.
- Pederson, N. and B. Black. 2008. The Relation Between Growth Rate & Longevity in Trees: a Biological Law? University of Kentucky's EcoLunch. March 28th, 2008.
- Blythe, T., C. Ford and N. Pederson. 2007. Changes in water use efficiency and xylem production of two *Pinus strobus* plantations. Ann. Meeting of the Kentucky Acad. of Sciences, Louisville, KY, Nov. 9th-10th, 2007.
- Blythe, T., T. Evans, C. Lattin, K. Tackett and N. Pederson. 2007. Effects of Climate and Geography on the Radial Growth of Seven Eastern Tree Species. Annual Meeting of the Kentucky Academy of Sciences, Louisville, KY, November 9th-10th, 2007.
- Tackett, K., N. Pederson and S. Clark. 2007. Searching for potential old-growth forest in the Cumberland Plateau Region: Comparison of age structure in hemlock-dominated ravines and

- adjacent upland oak-hardwood forests within Cane Creek WMA, Laurel County, Kentucky. Annual Meeting of the Kentucky Academy of Sciences, Louisville, KY, November 9th-10th, 2007.
- Blythe, T. and N. Pederson. 2007. Radial Growth of Southernmost and Northeasternmost Populations of *Quercus Montana* (Chestnut Oak). 2007 National Collegiate Honors Council's Annual Conference - "Creative Tensions, Challenging Environments." Denver, Colorado, October 31 – November 4, 2007.
- Pederson, N. 2007. The Interconnected Values of Old-growth Forests & Tree-Ring Research. First Meeting of the Kentucky Old-Growth Forest Society. Jun 15th & 16th. Oral Presentation.
- Pederson, N. 2007. Accelerated Growth Rates in Old Trees: the seemingly unimportance of CO<sub>2</sub>. University of Kentucky's Annual Spring Symposium. May 11th. Oral Presentation.
- Pederson, N. 2007. The Living Dead, Overachieving Elderly and Other Revelations Through Talkative Trees. The Ohio State University School of Natural Resources Seminar Series. May 9th. Invited Talk.
- Pederson, N. 2006. Old-Growth Trees: One Foot in the Grave? American Society of Consulting Arborists Annual Conference, Napa, California, December 4th, 2006. Invited Presentation.
- Pederson, N. 2006. Paleoclimatic and Neo-paleoecological Applications for Kentucky's Mesonet. Annual Meeting of the Kentucky Academy of Sciences, Morehead, KY, November 10th, 2006. Invited Presentation.
- Pederson, N. 2006. Zombie Maples, Day-Walking Pines and Old Trees on 'Supplements': Forest Secrets Revealed Through Tree-Ring Analysis. University of Kentucky Department of Forestry Seminar Series, November 8th, 2006. Invited Presentation.
- Pederson, N. 2006. Changes in Climate Sensitivity and Growth Rates of Trees Across the Hudson River Valley. Changing Climate and Its Consequences In The Hudson River Valley: Past, Present, and Future. NASA/Goddard Institute for Space Studies, New York, NY, Nov 2nd, 2006. Invited Talk.
- Pederson, N. 2006. Nothing Venture, Nothing Gained: Tree-ring Analysis in Temperate Hardwood Forests. Chinese Academy of Sciences' Institute of Botany, Beijing, China, July 1st, 2006. Invited Presentation.
- Pederson, N. 2006. An Introduction to Tree Ring Analysis. West-China Alpine Botanical Garden Duijiang City, Sichuan Province, China. June 2006. Invited Presentation.
- Pederson, N., E.R. Cook, H.M. Hopton, G.C. Jacoby and K. Griffin. 2006. Evidence of Accelerated Growth in Old Trees: A 'New' Sink for Old Carbon? 7th International Dendrochronological Conference, Beijing, China. June 16th, 2006. Oral Presentation.
- Pederson, N., B. Poulter, M. Evans. 2006. Locating potential old-growth forests in the commonwealth of Kentucky. 7<sup>th</sup> Eastern Old-Growth Conference. Little Rock, AR.
- Pederson, N., T. D'Amato and D. Orwig. 2006. Natural history from dendrochronology: maximum ages and canopy persistence of rarely studied hardwood species. 15th Central Hardwood Conference. Knoxville, TN.

### **Service and Community Activities**

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|---------------------|---|
| Spring '11- present | Board member, Greenbrook Nature Sanctuary, Tenafly, NJ  |
| Apr. '10 - present  | Board of Directors of the Kentucky Native Plant Society   |
| March '09 - present | Scientific Advisory Committee, Floracliff Nature Sanctuary  |
| March '08 - 2010    | Project manager, scientific advisor to "Save Kentucky's Hemlocks":<br><a href="http://www.kyhemlocks.org/">http://www.kyhemlocks.org/</a> |
| Summer 2008         | Established annual Old-growth Forest Internship at EKU's Lilley-Cornett Woods in collaboration with the Division of Natural Areas         |

June 2007 Organized and co-convended conference on Old-Growth Forests in the Commonwealth of Kentucky. Pine Mtn. State Resort Park. June 2007.

June 2007 Group Leader, North American Dendroecological Fieldweek, Smoky Mtns.

Fall 2006 - 2010 Member of Kentucky's Forest Health Task Force

Fall 2006 Established '*Eastern OLDLIST*' – an online database for well-documented maximum ages for species found in eastern North America –more than 13,000 page visits <http://people.eku.edu/pedersonn/oldlisteast/>

Spring 2006 Started annual Natural History Lecture series as a part of Earth Days in the Cumberlands, Eastern Kentucky University

June 2006 Co-group leader, International Dendrochronological Fieldweek, Mongolia

2004 - 2005 Board member, Greenbrook Nature Sanctuary, Tenafly, NJ

Fall 2000 Co-convended conference on Mongolian Paleoclimate and Environment at LDEO

Summer 2000 Co-lead and group leader, 1<sup>st</sup> Dendro Fieldweek, Ulaanbaatar, Mongolia