

NICHOLAS VAN LIEW BROKAW

Department of Environmental Sciences
University of Puerto Rico-Río Piedras
P.O. Box 70377, San Juan, Puerto Rico 00936-8377, U.S.A.
phone 787 764-0000, ex. 1-4940-#
e-mail: nvbrokaw@ites.upr.edu

Birth: 26 November 1947; Wilmington, Delaware
Education: PhD 1980 University of Chicago, Biology
AB 1970 Princeton University; Sociology, American Studies
Current position: *Professor*, University of Puerto Rico-Río Piedras, 2001-
Previous positions: *Principal Investigator*, Luquillo Long-Term Ecological Research Program, Puerto Rico, 2002-2015; *Interim Director*, Program in Environmental Sciences, University of Puerto Rico-Río Piedras, 2006-2007; *Bullard Fellow*, Harvard Forest, Harvard University, 1999-2000; *Senior Scientist*, Manomet Center for Conservation Sciences, 1983-1999; *Visiting Assistant Professor*, Kenyon College, 1980-1983

RESEARCH

I study long-term changes in tropical forests resulting from natural and human disturbance. On the shorter time scale, I am studying how three-dimensional forest structure has changed over the past 25 years in hurricane-affected forests in Puerto Rico and how tree species composition has changed over the last 40 years in a Panama forest (studies I established 25 and 40 years ago, respectively). On a longer scale I am studying how the land use of the ancient Maya has affected tree species composition in present-day forests, 1200 years after the Maya, in Mesoamerica.

RESEARCH GRANTS (N. Brokaw PI or Co-PI)

Faculty Development Grant, Kenyon College, 1981
National Geographic Society, 1982
Charles A. Lindbergh Fund, Inc., 1983
National Geographic Society, 1984
National Science Foundation, Ecology Program (Brokaw PI), 1986
Brehm Fund, 1987
Island Foundation, 1989
Pew Charitable Trusts, 1989
Prospect Hill Foundation, 1991
National Fish and Wildlife Foundation, 1992
W. Alton Jones Foundation, 1993
National Science Foundation, Anthropology Program, 1993
U.S. Man and the Biosphere Program, 1996
National Science Foundation, Small Grants for Exploratory Research, 1999
The Andrew Mellon Fund, 2000-2002
National Science Foundation, LTER Program, 2000-2002
National Science Foundation, LTER Program, 2002-2006
National Science Foundation, Ecology Program, 2003
Smithsonian Institution, 2004
National Science Foundation, Ecology Program, 2005
National Science Foundation, LTER Program (Brokaw PI), 2006-2012

(continued)

RESEARCH GRANTS (N. Brokaw PI or Co-PI) (*continued*)

Supplemental grants from NSF to LTER Program: 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012

National Science Foundation, IGERT Program, 2008-2013

University of Puerto-Río Piedras, Mini Grant de Verano, 2010

National Science Foundation, Dynamics of Coupled Natural-Human Systems (Brokaw PI), 2011

National Science Foundation, LTER Program (Brokaw PI), 2012-2014

National Science Foundation, travel grant, 2013

PUBLICATIONS

Garwood, N. C., D. P. Janos, and N. Brokaw. 1979. Earthquake-caused landslides: a major disturbance to tropical forests. *Science* 140:997-999.

Schemske, D. W., and N. Brokaw. 1981. Treefalls and the distribution of understory birds in a tropical forest. *Ecology* 62:938-945.

Brokaw, N. V. L. 1982. The definition of treefall gap and its effect on measures of forest dynamics. *Biotropica* 14:158-160.

Brokaw, N. V. L. 1982. Treefalls: frequency, timing, and consequences. Pages 101-108 in E. G. Leigh, A. S. Rand, and D. M. Windsor (eds.). *The Ecology of a Tropical Forest: Seasonal Rhythms and Long-term Changes*. Smithsonian Institution Press, Washington, D. C.

Foster, R. B., and N. V. L. Brokaw. 1982. Structure and history of the vegetation of Barro Colorado Island. Pages 67-81 *ibid*.

Karr, J. R., D. W. Schemske, and N. V. L. Brokaw. 1982. Temporal variation of the undergrowth bird community in a tropical forest. Pages 441-453 *ibid*.

Brokaw, N. V. L. 1983. Groundlayer dominance and the apparent inhibition of tree regeneration by *Aechmea magdalenae* (Bromeliaceae) in a tropical forest. *Tropical Ecology* 24:194-200.

Brokaw, N. V. L. 1985. Treefalls, regrowth, and community structure in tropical forests. Pages 53-69 in S. T. A. Pickett and P. S. White (eds.). *The Ecology of Natural Disturbance and Patch Dynamics*. Academic Press, New York.

Brokaw, N. V. L. 1985. Gap-phase regeneration in a tropical forest. *Ecology* 66:682-687.

Brokaw, N. V. L. 1986. Seed dispersal, gap colonization, and the case of *Cecropia insignis*. Pages 323-331 in A. Estrada and T. H. Fleming (eds.). *Frugivory and Seed Dispersal*. Dr. W Junk, The Hague.

Brokaw, N. V. L. 1987. Gap-phase regeneration of three pioneer tree species in a tropical forest. *Journal of Ecology* 75:9-19.

Brokaw, N. V. L. 1987. Algunos aspectos importantes en el estudio de la demografía de plantas en los bosques tropicales. *Revista de Biología Tropical* 35:205-206.

Putz, F. E., and N. V. L. Brokaw. 1989. Sprouting of broken trees on Barro Colorado Island, Panama. *Ecology* 70:508-512.

Brokaw, N. V. L., and S. M. Scheiner. 1989. Species composition in gaps and structure of a tropical forest. *Ecology* 70:538-541.

Brokaw, N. V. L., and J. S. Grear. 1991. Forest structure before and after Hurricane Hugo at three elevations in the Luquillo Mountains, Puerto Rico. *Biotropica* 23:386-392.

Brokaw, N. V. L., and L. R. Walker. 1991. Summary of the effects of Caribbean hurricanes on vegetation. *Biotropica* 23:442-447.

Walker, L. R., D. J. Lodge, N. V. L. Brokaw, and R. B. Waide. 1991. Hurricanes in the Caribbean. *Biotropica* 23:313-316.

Walker, L. R., N. V. L. Brokaw, D. J. Lodge, and R. B. Waide (eds.). 1991. Special Issue: Ecosystem, Plant, and Animal Responses to Hurricanes in the Caribbean. *Biotropica* 23(supplement):313-521.

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PUBLICATIONS (*continued*)

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- Zimmerman, J. K., E. M. Everham, III, R. B. Waide, D. J. Lodge, C. M. Taylor, and N. V. L. Brokaw. 1994. Responses of tree species to hurricane winds in subtropical wet forest in Puerto Rico: implications for tropical tree life histories. *Journal of Ecology* 82:911-922.
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- Brokaw, N. V. L., A. A. Whitman, R. Wilson, J. M. Hagan, N. Bird, E. P. Mallory, L. K. Snook, P. J. Martins, D. Novelo, D. White, and E. Losos. 1998. Toward sustainable forestry in Belize. Pages 225-239 in R. B. Primack, D. Bray, H. A. Galletti, and I. Poinciano (eds.). *Timber, Tourists, and Temples: Conservation and Development in the Maya Forest of Belize, Guatemala, and Mexico*. Island Press, Washington, D.C.
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- Thompson, J., N. Brokaw, J. K. Zimmerman, R. B. Waide, E. M. Everham, III, and D. A. Schaefer. 2004. Luquillo Forest Dynamics Plot. Pages 540-550 in E. Losos and E. G. Leigh, Jr. (eds.). *Tropical Forest Diversity and Dynamism: Results from a Long-Term Tropical Forest Network*. University of Chicago Press, Chicago, USA.
- Mallory, E. P., N. V. L. Brokaw, and S. C. Hess. 2004. Coping with capture rate bias: Canopy height and several extrinsic factors. *Studies in Avian Biology* 29:151-160.
- Uriarte M., C. D. Canham, J. Thompson, J. K. Zimmerman, and N. Brokaw. 2005. Seedling recruitment in a hurricane-driven forest: Light limitation, density-dependence, and the spatial distribution of parent trees. *Journal of Ecology* 93:291-304.
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PUBLICATIONS (*continued*)

- Herrera-Montes, A., and N. Brokaw. 2010. Conservation value of tropical secondary forest: a herpetofaunal perspective. *Biological Conservation* 143:1414-1422.
- Shiels, A. B., J. K. Zimmerman, D. C. García-Montiel, I. Jonckheere, J. Holm, D. Horton, and N. Brokaw. 2010. Plant responses to simulated hurricane impacts in a subtropical wet forest, Puerto Rico. *Journal of Ecology* 98:659-673.
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- Brokaw, N., T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (eds.). 2012. *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press. Oxford, U.K.
- Brokaw, N., J. Zimmerman, G. Camilo, A. Covich, T. Crowl, N. Fetcher, M. Gannon, B. Haines, J. Lodge, A. Lugo, R. Myster, C. Pringle, J. Sharpe, F. Scatena, T. Schowalter, W. Silver, J. Thompson, D. Vogt, K. Vogt, R. Waide, L. Walker, M. Willig, L. Woolbright, J. Wunderle, and X. Zou. 2012. Response to disturbance. Pages 201-271 in Brokaw, N., T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (eds.). *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press. Oxford, U.K.
- Crowl, T. A. A. E. Lugo, N. Brokaw, A. P. Covich, R. Waide, J. Lodge, C. Pringle, K. Beard, J. Thompson, and G. González. 2012. When and where biota matter: linking disturbance regimes, species characteristics and dynamics of communities and ecosystems. Pages 272-304 *ibid*.
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- McDowell, W. H., F. N. Scatena, R. B. Waide, N. Brokaw, et al. 2012. Geographic and ecological setting. Pages 72-163 *ibid*.
- Scatena, F. N., F. Blanco, K. Beard, R. Waide, A. E. Lugo, N. Brokaw, W. Silver, B. Haines, and J. Zimmerman. 2012. Disturbance regime. Pages 164-200 *ibid*.
- Laurance, W. F., et al. including N. Brokaw. 2012. Averting biodiversity collapse in tropical forest protected areas. *Nature* 489:290-294.
- Robertson, G. P., S. L. Collins, D. R. Foster, N. Brokaw, H. W. Ducklow, T. L. Gragson, C. Gries, S. K. Hamilton, A. D. McGuire, J. C. Moore, E. H. Stanley, R. B. Waide, and M. W. Williams. 2012. Strategic role of the Long-Term Ecological Research Network in ecological and environmental science and education. *BioScience* 62:342-353.
- McDowell, W. H., R. Brereton, F. N. Scatena, J. B. Shanley, N. Brokaw, and A. E. Lugo. 2013. Interactions between lithology and biology drive the long-term response of stream chemistry to major hurricanes in a tropical landscape. *Biogeochemistry* 116:175-186. DOI 10.1007/s10533-013-9916-3.
- Zimmerman, J. K., J. A. Hogan, A. B. Shiels, J. E. Bithorn, S. M. Matta Carmona, and N. Brokaw. 2014. Seven-year responses of trees to experimental hurricane effects in a tropical rainforest, Puerto Rico. *Forest Ecology and Management* 332:64-74.
- Brokaw, N., and S. E. Ward. 2016. Vegetation. Pages 367-371 in W. R. T. Witschey (ed.). *Encyclopedia of the Ancient Maya*. Rowman & Littlefield, Lanham, Maryland.
- (*continued*)

PUBLICATIONS (*continued*)

- Ward, S. E., and N. Brokaw (eds). 2016. Synergies between biodiversity and timber management. Special Section, *International Journal of Biodiversity Science, Ecosystem Services & Management*. Volume 12.
- Ward, S. E., and N. Brokaw. 2016. Editorial: Synergies between biodiversity and timber management. *International Journal of Biodiversity Science, Ecosystem Services & Management* <http://dx.doi.org/10.1080/21513732.2016.1169578>, March 2016.
- Scientia staff, N. Brokaw, and S. E. Ward, and. 2016. Cooperation reveals legacy of ancient land use. *Scientia* 104:38-40. www.scientiapublications.com/dr-nicholas-brokaw-and-dr-sheila-ward-cooperation-reveals-legacy-of-ancient-land-use-university-of-puerto-rico-rio-piedras/

SELECTED REPORTS

- Brokaw, N. V. L., and T. L. Lloyd-Evans. 1987. *The Bladen Branch Wilderness* [Belize]. Manomet Bird Observatory.
- Arnold, M. E., F. B. Armitage, W. L. Bender, N. V. L. Brokaw, H. Hilmi, J. R. Palmer, and S. L. Pringle. 1989. *Belize Tropical Forestry Action Plan*. Overseas Development Administration, London.
- Brokaw, N. V. L. 1991. Vegetation and tree flora near the camp of the Joint Services Scientific Expedition to the Upper Raspaculo. Pages D-1 to D-1-11 in Rogers, A. D. F., and D. A. Sutton (eds.). *The Upper Raspaculo River Basin, Belize, Central America*. The Natural History Museum, London.
- Wilson, J. R., N. Beck, R. Bech, J. Briggs, N. Brokaw, S. Iremonger, B. Miller, T. Rath, and C. Santos. 1995. *Towards a National Protected Area Systems Plan for Belize*. NARMAP, Belmopan, Belize.
- Brokaw, N., M. Peña-Chocarro, S. Knapp, and S. E. Ward. 2016. *Trees of La Milpa: Field Identification of Trees in the La Milpa Area, Rio Bravo Conservation and Management Area, Belize*. 144 pages. self-published

THESIS AND DISSERTATION COMMITTEES

Completed at University of Puerto Rico (*Brokaw major professor)

PhD: Diana Delgado, Jimena Forero, Adriana Herrera*, María del Pilar Angulo-Sandoval, Ileana Galanes, Yoganí Govender, Mathew Warren, William Beltrán

MS: Andrés Cuervo, Jimena Forero, Rebeca de Jesús, James Aaron Hogan, Marcela Suárez, Adriana Herrera*, Isabel Herrera, Jéssica Fonseca da Silva, Pamela Medina, Seth Rifkin*, Dingfang Chen, Orlando Acevedo, Xian Wang

In process at University of Puerto Rico (*Brokaw major professor)

PhD: José Fumero, Rohit Sharma, Paul Furumo, Marcela Ospina, Ose Pauleus, Chao Wang, Xianbin Liu

MS: Hervé Chevalier*

Degrees not at University of Puerto Rico

P.-M. Forget. 1988. PhD, L'Université Paris; N.N. Devoe. 1990. PhD, Yale University; P.W. Alcorn. 1993. Ms., University of Florida; E.M. Everham, III. 1995. PhD, SUNY College of Environmental Science and Forestry; J.L. O'Hara. 1999. Doctor of Forestry, Yale University

COURSES TAUGHT

Undergraduate: General Biology and laboratory (part), Evolution, Plant Biology, Ecology, Environmental Science, Water Resources. *Graduate*: Tropical Ecosystems, Tropical Forest Ecology, Environmental History, Special Topics in Modern Biology (tropical forest community dynamics)

REVIEWS

Grant proposal reviews:

National Science Foundation, National Geographic Society, The Charles A. Lindbergh Fund, The Center for Field Research, Organization for Tropical Studies, National Research Council (UK), Smithsonian Institution, Natural Environment Research Council (UK), National Fish and Wildlife Foundation, Chicago Zoological Society, NSF Doctoral Dissertation Improvement Grants (review panel), Research Commission of the Swiss Federal Institute of Technology Zurich, The Leverhulme Trust (UK), Puerto Rico EPSCoR, NSF LTER Program (review panel)

Manuscript reviews:

Advances in Economic Botany, Ambio, American Journal of Botany, American Midland Naturalist, American Naturalist, Annals of Botany, Annals of the Missouri Botanical Garden, Australian Journal of Ecology, Biodiversity and Conservation, Biological Conservation, Biomass & Bioenergy, BioScience, Biotropica, Botanical Bulletin of Academia Sinica, Botanical Gazette, Botanical Journal of the Linnean Society, Botany, Bulletin of the Florida Museum of Natural History, Canadian Journal of Forest Research, Caribbean Journal of Science, Conservation Biology, Ecología Austral, Ecological Applications, Ecological Bulletins, Ecological Research, Ecology, Ecology Letters, Ecosystems, Folia Geobotanica, Forest Ecology and Management, Journal of Animal Ecology, Journal of Biogeography, Journal of Caribbean Ornithology, Journal of Coastal Research, Journal of Ecology, Journal of Forest and Environmental Science, Journal of Geophysical Research–Biogeosciences, Journal of Plant Ecology, Journal of Tropical Ecology, Journal of Vegetation Science, Latin American Antiquity, National Geographic Research, New Forests, New Zealand Journal of Botany, New Zealand Journal of Ecology, Oecologia, Oikos, Plant Ecology [Vegetatio], Proceedings of the Royal Society B, Rangelands, Restoration Ecology, Revista Cuadernos de Investigación, Revista Internacional Biodiversidad Neotropical, Science, Seed Science Research, Systematics and Biodiversity, Taiwania, The Philippine Scientist, Tree Physiology, Trends in Ecology and Evolution, Tropical Ecology, Vida Silvestre Neotropical, Wilson Bulletin

Book reviews:

Hall, J. B., and M. D. Swaine. 1981. *Vascular Plants in a Tropical Rain Forest: Forest Vegetation in Ghana*. Dr W Junk The Hague. For *The Plant Science Bulletin*.

Whitmore, T. C.. 1990. *An Introduction to Tropical Rain Forests*. Clarendon Press Oxford England. For *The Journal of Vegetation Science*.

Schelhas, J., and R. Greenberg (eds.). 1996. *Forest Patches in Tropical Landscapes*. Island Press Novelo California. For *Conservation Biology*.

Schulenberg, T. S., and K. Awbrey (eds.). *The Cordillera del Cóndor Region of Ecuador and Peru: A Biological Assessment and A Rapid Assessment of the Humid Forests of South Central Chuquisaca Bolivia*. Rapid Assessment Program Working Papers Nos. 7 & 8 Conservation International Washington DC. For *Conservation Biology*.

Turner, I. M. 2001. *The Ecology of Trees in the Tropical Rain Forest*. Cambridge University Press Cambridge U.K. For *The Journal of Vegetation Science*.