

**Dennis Peter Swaney**  
**Curriculum Vitae**

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**Contact Information:** Dept of Ecology and Evolutionary Biology  
Corson Hall  
Cornell University  
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**Education:**

B.A., Physics – 1977      New College; Sarasota, FL  
M.S., Environmental Engineering Science/Systems Ecology - 1978  
University of Florida; Gainesville, FL

**Professional Experience:**

2003 – present    Research Support Specialist/Environmental Modelling, Dept of Ecology  
and Evolutionary Biology, Cornell University, Ithaca, NY.  
1999 – 2004      Environmental Systems Analyst, Boyce Thompson Institute, Ithaca, NY.  
1998 – 1999      Environmental Research Scientist, Dept of Systems Ecology, Stockholm  
University, Stockholm, Sweden.  
1994 –1997      Environmental Systems Analyst, Cornell Center for the Environment, Cornell  
University, Ithaca, NY.

**Research Interests:**

Understanding hydrological and biogeochemical processes and their relationships to aquatic and terrestrial ecosystem dynamics; nutrient cycles from field to global scales; effects land-use changes, management practices, and climate change on nutrient fluxes from the landscape; response of estuaries and other coastal systems to anthropogenic nutrient loads; practical analytical approaches for management, including nutrient budgets and nutrient accounting methods in watersheds and coastal waters; mathematical modeling of transport and dispersal of materials in the environment, including development of advection/diffusion/reaction models.

**Selected Publications**

Peer-Reviewed

Howarth, R.W., **D.P.Swaney**, G. Billen, J. Garnier, B. Hong, C. Humborg, P. Johnes, C.-M. Mörth, and R.M. Marino. 2011. Nitrogen Fluxes from Large Watersheds to Coastal Ecosystems Controlled by Net Anthropogenic Nitrogen Inputs and Climate. *Frontiers in Ecology and the Environment*. doi:10.1890/100178

Hong, B., **Swaney, D.P.**, Howarth, R.W. 2011. A toolbox for calculating net anthropogenic nitrogen inputs (NANI). *Environmental Modelling & Software* 26, 623-633. doi:10.1016/j.envsoft.2010.11.012

**Swaney, D.P.**, D. Scavia, R.W. Howarth, and R.M. Marino. 2008. Estuarine Classification and Response to Nitrogen Loading: Insights from Simple Ecological Models. *Estuarine, Coastal and Shelf Science* 77:253-263.

Giordani, G., M. Austoni, J. M. Zaldívar, **D. P. Swaney** and P. Viaroli. 2008. Modelling ecosystem functions and properties at different time and spatial scales in shallow coastal lagoons: an application of the LOICZ biogeochemical model. *Estuarine, Coastal and Shelf Science* 77:264-277.

Buddemeier, R.W., S.V. Smith, **D.P. Swaney**, C.J. Crossland and B.A. Maxwell. 2008. Coastal Typology: An integrative "neutral" technique for coastal zone characterization and analysis. *Estuarine, Coastal and Shelf Science* 77:197-205.

Berg, P., **D.P. Swaney**, S. Rysgaard, B. Thamdrup, and H. Fossing. 2007. A fast numerical solution to the general mass-conservation equation for solutes and solids in aquatic sediments. *Journal of Marine Research*. 65(3):317-343.

Mörth, C.-M., C. Humborg, H. Eriksson, Å. Danielsson, M. Rodriguez Medina, S. Löfgren, **D.P. Swaney** and L. Rahm. 2007. Modelling riverine nutrient transport to the Baltic Sea – A large scale approach. *Ambio* 36:124-133.

Howarth, R.W., **D.P. Swaney**, E.W. Boyer, R.M. Marino, N. Jaworski and C.L. Goodale. 2006. The influence of climate on average nitrogen export from large watersheds in the Northeastern United States. *Biogeochemistry* 79:163-186.

Smedberg, E., C.-M. Mörth, **D.P. Swaney**, C. Humborg. 2006. Modelling hydrology and silicon-carbon interactions in taiga and tundra biomes from a landscape perspective - Implications for global warming feedbacks. *Global Biogeochemical Cycles*. 20, doi:10.1029/2005GB002567

Hong, B., D. A. Weinstein, and **D.P. Swaney**. 2006. Assessment of ozone effects on nitrate export from Hubbard Brook Watershed 6. *Environmental Pollution* 141:8-21.

Hong, B., **D.P. Swaney**, and D. A. Weinstein. 2006. Simulating spatial nitrogen dynamics in a forested reference watershed, Hubbard Brook Watershed 6, New Hampshire, USA. *Landscape Ecology*. 21:195-211.

Smith, S. V., **D. P. Swaney**, R. W. Buddemeier, M. R. Scarsbrook, M. A. Weatherhead, C. Humborg, H. Eriksson, F. Hannerz. 2005. River Nutrient Loads and Catchment Size. *Biogeochemistry* 75: 83–107.

Hong, B., R. L. Strawderman, **D. P. Swaney**, and D. A. Weinstein. 2005. Bayesian

estimation of input parameters of a nitrogen cycle model applied to a forested reference watershed, Hubbard Brook Watershed Six. *Water Resources Research* 31(3):W03007

Hong, B., **D.P. Swaney**, P.B. Woodbury, and D. A. Weinstein. 2005. Long-term nitrate export from Hubbard Brook Watershed 6 driven by climatic variation. *Water, Air and Soil Pollution*. 160: 293-326

**Swaney, D.P.** and C.A.S. Hall. 2004. Odum in Texas: A Brief Review of H.T. Odum's Texas Bays studies. *Ecological Modelling*. 178:59-63.

S. V. Smith, **D. P. Swaney**, L. Talue-McManus, J. D. Bartley, P. T. Sandhei, C. McLaughlin, V. C. Dupra, C. J. Crossland, R. W. Buddemeier, B. A Maxwell, F. Wulff. 2003. Humans, Hydrology, and the Distribution of Inorganic Nutrient Loading to the Ocean. *Bioscience* 53(3):235-245.

Woodbury P. B., R.M. Beloin, **D. P. Swaney**, B.G. Gollands, D.A. Weinstein. 2002. Using the ECLPSS software environment to build a spatially explicit component-based model of ozone effects on forest ecosystems. *Ecological Modelling*. 150:211-238.

Norberg, J., **D.P. Swaney**, J. Dushoff, J. Lin, R. Casagrandi and S.A. Levin. 2001. Phenotypic diversity and ecosystem functioning in changing environments: A theoretical framework. *Proc. Nat. Acad. Sci.*, 98(20):11376-11381.

Howarth, R.W., **D.P. Swaney**, T.J. Butler, and R. Marino. 2000. Climatic control on eutrophication of the Hudson estuary. *Ecosystems* 3:210-215.

**Swaney, D. P.**, T. A. Butler, and R.W. Howarth. 1999. A Novel Approach for Estimating Ecosystem Production and Respiration in Estuaries: Application to the Oligohaline and Mesohaline Hudson River. *Limnol. Oceanogr.* 44:1509-1521.

**Swaney, D.P.** 1999. Analytical solution of Boudreau's equation for a tracer subject to food-feedback bioturbation. *Limnol. Oceanogr.* 44:697-698.

Kuo, W.L., T. S. Steenhuis, C. E. McCulloch, C. L. Mohler, D. Weinstein, S. DeGloria, and **D. P. Swaney**. 1999. Effect of grid size on runoff and soil moisture in a GIS-based, variable-source-area hydrology model. *Water Resources Res.* 35:3419-3428.

**Swaney, D.P.**, D. Sherman, and R.W. Howarth. 1996. Modeling Water, Sediment, and Organic Carbon Discharges in the Hudson/Mohawk Basin: Coupling to Terrestrial Sources. *Estuaries*, 19(4):833-847.

Howarth, R.W., R. Schneider, **D. P. Swaney**. 1996. Metabolism and Organic Carbon Fluxes in the Tidal Freshwater Hudson River. *Estuaries*, 19(4):848-865.

Howarth, R.W., G. Billen, **D. P. Swaney**, A. Townsend, N. Jaworski, K. Lajtha, J. A. Downing, R. Elmgren, N. Caraco, T. Jordan, F. Berendse, J. Freney, V. Kudeyarov, P. Murdoch, Zhu Zhao-liang. 1996. "Riverine Inputs of Nitrogen to the North Atlantic Ocean:

Fluxes and Human Influences". *Biogeochemistry*, 35:75-139.

In press, in preparation, etc

**Swaney, D.P.**, Santoro, R., Howarth, R.W. and Donaghy, K. Submitted. Historical changes in the food and water supply systems of the New York Metropolitan Area. Special issue of *Regional Environmental Change*.

Hägg, H.E., C. Humborg, **D.P. Swaney**, and C.-M. Mörtz. Riverine nitrogen export in Swedish catchments dominated by atmospheric inputs. Accepted for publication in *Hydrology and Earth System Sciences*.

**Swaney, D.P.**, S.V. Smith, and F. Wulff. In Press. The LOICZ Biogeochemical modeling protocol and its application to estuarine ecosystems. In: Baird, D and A. Mehta (eds.), *Treatise on Estuarine and Coastal Science*, Vol. 9, Elsevier.

**Swaney, D.P.** In Press. Biogeochemical budgeting in estuaries. In: Laane, R.W.P. and J.J. Middelburg.(eds.), *Treatise on Estuarine and Coastal Science*, Vol. 5, Elsevier.

**Swaney, D. P.**, C. Humborg, K. Emeis, A. Kannen, W. Silvert, P. Tett, R. Pastres, C. Solidoro, M. Yamamuro, Y. Hénocque, R. Nicholls. In Press. Five critical questions of scale for the coastal zone. *Estuarine Coastal and Shelf Science*. Available online: doi:10.1016/j.ecss.2011.04.010

Galante, T. E., T. R. Horton, and **D.P.Swaney**. 2011. 95% of Spores Fall Within 65cm of the Cap- A Field and Modeling Based Study. *Mycologia*. Available online: doi:10.3852/10-388

#### Book Chapters and Reports

Smith, S.V., **D.P. Swaney**, and L. Talaue-McManus. 2010. Carbon–Nitrogen–Phosphorus Fluxes in the Coastal Zone: The LOICZ Approach to Global Assessment. Chapter 14 (pp 575-586) in: *Carbon and Nutrient Fluxes in Continental Margins A Global Synthesis Series: Global Change - The IGBP Series*. Liu, K.-K.; Atkinson, L.; Quiñones, R.; Talaue-McManus, L. (Eds.) 2010, XXVIII, 744 p.

Buddemeier, R. W., S.V. Smith, S.B. Bricker, **D.P. Swaney**, S.D. Dunham, and B. Maxwell. 2007. “Determining Typology”, Pp 144-152, in: Bricker, S., B. Longstaff, W. Dennison, A. Jones, K. Boicourt, C. Wicks, and J. Woerner (eds). *Effects of Nutrient Enrichment In the Nation’s Estuaries: A Decade of Change*. NOAA Coastal Ocean Program Decision Analysis Series No. 26. National Centers for Coastal Ocean Science, Silver Spring, MD. 328 pp.

Billen, G., J. Garnier and **D.P. Swaney**. 2007. Some highlights of the workshop on integrated budgeting of nitrogen fluxes in regional watersheds: Linking atmospheric, terrestrial, aquatic and coastal Interactions. LOICZ INPRINT 2007/1. April, 2007. pp7-11. LOICZ, Geesthacht, Germany. [http://www.loicz.org/public/loicz/newsletters/inprint\\_2007-](http://www.loicz.org/public/loicz/newsletters/inprint_2007-)

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**Swaney, D.P.**, K.E. Limburg and K. Stainbrook. 2006. Some Historical Changes in the Patterns of Population and Land Use in the Hudson River Watershed. In: J. Waldman, K.E. Limburg and D. Strayer, (eds.), *Hudson River Fishes and their Environment*. American Fisheries Society, Bethesda, MD. 365 pp.

Howarth, R.W., R. Marino, **D.P. Swaney**, and E.W. Boyer. 2006. Wastewater and watershed influences on primary productivity and oxygen dynamics in the Lower Hudson River Estuary. In: Levinton, J. S., (ed.) *The Hudson River Ecosystem*. Oxford University Press. 488 pp.

**Swaney, D.P.** and R.W. Howarth. 2005. The North American Nitrogen Center. LOICZ Newsletter #36. December, 2005. pp. 6-8. LOICZ, Texel, The Netherlands.  
<http://www.loicz.org/public/loicz/newsletters/number36.pdf>

Smith, S. V., R. W. Buddemeier, F. Wulff, and **D. P. Swaney**. 2005. C, N, P Fluxes in the Coastal Zone. Chapter 3 in: Crossland, C.J.; Kremer, H.H.; Lindeboom, H.J.; Marshall Crossland, J.I.; Le Tissier, M.D.A. (eds). *Coastal Fluxes in the Anthropocene. The Land-Ocean Interactions in the Coastal Zone Project of the International Geosphere-Biosphere Programme*. Springer-Verlag, Berlin Heidelberg.

Giordani, G., P. Viaroli, **D.P. Swaney**, C.N. Murray, J.M. Zaldivar and J.I. Marshall Crossland (eds). 2005. Nutrient fluxes in transitional zones of the Italian coast., LOICZ Reports & Studies No. 28, ii + 157 pages, LOICZ IPO, Texel, The Netherlands.

Buddemeier, R.W., S.V. Smith, **D.P. Swaney** and C.J. Crossland (eds). 2002. The role of the coastal ocean in the disturbed and undisturbed nutrient and carbon cycles. LOICZ Reports & Studies No. 24, ii + 83 pages, LOICZ, Texel, The Netherlands.

Okubo, A., J.A. Ackerman and **D.P. Swaney**. 2002. Passive Diffusion in Ecosystems. Chapter 3 in: Okubo, A. and S. A. Levin (eds). *Diffusion and Ecological Problems*, Revised Edition. Springer, New York.

Buddemeier, R.W., C.J. Crossland, B.A. Maxwell, S.V. Smith, **D.P. Swaney**, J.D. Bartley, G. Misgna, C. Smith, V.C. Dupra and J.I. Marshall Crossland (eds). 2002. LOICZ/UNEP Regional Synthesis Workshops: Australasia-Asia, the Americas, Africa-Europe: Summary report and compendium. LOICZ Reports & Studies No. 22. LOICZ, Texel, The Netherlands.

Howarth, R.W., N. Jaworski, **D.P. Swaney**, A. Townsend, and G. Billen. 2000. Some Approaches for Assessing Human Influences on Fluxes of Nitrogen and Organic Carbon to Estuaries. In: J. Hobbie (ed.), *Estuarine Synthesis: The Next Decade*. Island Press, Washington D.C.

Limburg, K.E., **D.P. Swaney** and D.L. Strayer. 2000. River Ecosystems, In: S.A. Levin (ed.) *The Encyclopedia of Biodiversity*. Academic Press, New York.

Ittekkot, V., L. Rahm, **D.P. Swaney**, and C. Humborg. 2000. Perturbed Silicon Cycle Discussed. EOS Trans. AGU. 81(18):198-200.

**Swaney, D.P.**, W-L. Kuo, D. A. Weinstein, F. Tsai, C. Pelkie, S. DeGloria, , C. Mohler, T. Steenhuis, C. McCulloch , 1996. "Response of a Watershed Model to Varying Spatial Landscape Characteristics", in H.T. Mowrer, ed., Proceedings of the 2nd International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, May 21-23, 1996, Fort Collins, CO.

Woodbury, P. B., R. M. Beloin, **D. P. Swaney**, B. E. Gollands, D. A. Weinstein and J. Laurence The ECLPSS environment for developing spatial ecological models using reusable components. EPA Final Report. Assistance Agreement No. R 825208-01-0. Boyce Thompson Institute, Ithaca, NY.

Boyer, E.W., C.J. Post, **D.P. Swaney**, D.R. Bouldin, and S.D. DeGloria. 1999. Hydrology and nitrogen dynamics in a tributary of Cayuga Lake. In: A symposium on environmental research in the Cayuga Lake watershed, Cornell University, October 12, 1999.

**Society memberships, committees, affiliations, etc**

Member, Scientific Steering Committee, Land Ocean Interactions in the Coastal Zone (LOICZ)

LOICZ liaison, North American Nitrogen Center

Member, Sigma Xi

Member, American Geophysical Union

Member, Estuarine Research Federation

Member, American Society of Limnology and Oceanography

Website developer & manager, LOICZ Biogeochemical budget website, Stockholm University, Stockholm, Sweden (<http://nest.su.se/mnode> )