

BERNARD W. SWEENEY
Curriculum vitae

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EDUCATION

1976: Ph.D. Biology. University of Pennsylvania, Philadelphia PA

1972: B.S. Biology. Delaware Valley University, Doylestown, PA

PROFESSIONAL EXPERIENCE

- 2017 – present Distinguished Research Scientist, Stroud Water Research Center, Avondale, PA 19311
- 1989 – 2017 President, Senior Research Scientist Stroud Water Research Center, Avondale, PA 19311
- 1989 – 2016 Executive Director, Senior Research Scientist Stroud Water Research Center, Avondale, PA 19311
- 1991 – Present Vice-President, Asociacion Centro De Investigacion Stroud, San Jose, Costa Rica
- 1988 – Present Adjunct Professor, Department of Zoology and The School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA.
- 1999 – 2016 President, Executive Director, Curator, Director, Stroud Water Research Center (independent 501 c 3)
- 1996 – 1999 Curator, Executive Director, Stroud Water Research Center of the Academy of Natural Sciences of Philadelphia; Vice-President, Curator, Environmental Group, Academy of Natural Sciences of Philadelphia
- 1988 – 1996 Associate Curator, Executive Director, Stroud Water Research Center of the Academy of Natural Sciences of Philadelphia
- 1978 – 1988 Assistant Curator, Stroud Water Research Center of the Academy of Natural Sciences of Philadelphia

RECENT TEACHING EXPERIENCE

University of Pennsylvania: Co-teach: Stream ecology

RECENT GRADUATE STUDENT MENTORING

- 2009 David Cobb U of PA Masters of Environmental Studies
- 2012 Luca Barnabei U of PA Masters of Environmental Studies
- 2013 Robert George U of PA Masters of Environmental Studies
- 2014 Robin Spurlino U of PA Masters of Environmental Studies
- 2014 Amanda Dunbar U of PA Masters of Environmental Studies
- 2014 Katherine Ridella U of PA Masters of Environmental Studies

2016 Lauren McGrath U of PA Masters of Environmental Studies
2016 Bryan Currinder U of PA Masters of Environmental Studies
2016 Naimul Islam U of PA Masters of Environmental Studies

CURRENT RESEARCH INTERESTS

I have published on (and my research interests include) the following: The role of water quality monitoring in conservation, population and community ecology of temperate and tropical aquatic invertebrates, pollution assessment in temperate and tropical streams using macroinvertebrates, the role of streamside forests in the structure and function of stream and river ecosystems, factors affecting the growth and survivorship of trees in riparian forests, the effects of global warming on stream ecosystems, genetic variation and gene flow among populations of stream insects, DNA barcoding of aquatic macroinvertebrates, the effects of diel and seasonal temperature change on aquatic insect populations, bioenergetics and secondary production of aquatic insects, and the bioassay of toxic materials in aquatic systems. Ecology of high gradient rivers of Bhutan.

SOCIETY MEMBERSHIPS

Society for Freshwater Science
American Association for the Advancement of Science
American Water Resources Association
Garden Club of America (Honorary Member)

RECENT AWARDS AND SERVICE

2015 “Conservation Individual of the Year” from the Berks County Conservation District in PA
2013 Forest Champion Award from the Alliance for the Chesapeake Bay for innovative methods or skills to inspire people to act on behalf of forests and improve forest health.
2010 Distinguished Service Award from the Society of Freshwater Science
2010 Elected an honorary member of the Garden Club of America for work on riparian forest restoration
2009 to present – Member, U of DE Delaware Environmental Institute Advisory Board
2006 “Lifetime Achievement Award” from the Chesapeake Bay Foundation and the “Margaret Douglas National Medal” from the Garden Club of America for achievement in conservation education.
2006 to present – President of the Georgia Farm Foundation (oversees and funds the Stroud Preserve, Marshalton PA)
2006 to present – Member, Environmental Advisory Committee for the Brandywine Conservancy
2004 to present – Co-Chairman Taxonomic Certification Committee of the Society of Freshwater Science
2003 “National Award of Excellence in Conservation” from the USDA Natural Resource Conservation Service for research and work on the restoration of streams and their riparian corridors.
2003 to present – Editorial Committee of Journal “Freshwater Science”

PUBLICATIONS

- Sweeney, B.W., A. Dunbar, C. Dow, and M. Daniels. 2018. Forest restoration on floodplains filled with legacy sediments: Removing sediments is not necessary for successful restoration. *Restoration Ecology* (in revision)
- Sweeney, B.W. and C. Dow. 2018. Forest restoration for water quality: improving success by excluding deer with low fencing. *Natural Areas Journal* (in revision)
- Kroll, S.A., R.J. Horwitz, D.H. Keller, B.W. Sweeney, J.K. Jackson, L.B. Perez. 2018. Large-scale protection and restoration programs aimed at improving and protecting stream ecosystem integrity: The role of planning, goal setting, monitoring and data management. *Freshwater Science* (in press).
- Sweeney, B.W., D.H. Funk, A. Camp, D.B. Buchwalter, and J.K. Jackson. 2018. Why Adult Mayflies of *Cloeon dipterum* (Ephemeroptera: Baetidae) Become Smaller as Temperature Warms. *Freshwater Science* 37(1):64-81.
- Chou H., W. Pathmasiri, J. Deese-spruill, S. J. Sumner, D. D. Jima, D. H. Funk, J. K. Jackson, B. W. Sweeney and D. B. Buchwalter. 2018. The Good, the Bad and the Lethal: Gene Expression and Metabolomics Reveal Physiological Mechanisms Underlying Chronic Thermal Effects in Mayfly Larvae (*Neocloeon triangulifer*). *Frontiers in Ecology and Evolution* 6:1-11. doi: 10.3389/fevo.2018.00027
- Kim, K. S., H. Chou, D.H. Funk, J. Jackson, B. Sweeney, and D. Buchwalter. 2017. Physiological responses to short term thermal stress in mayfly larvae (*Neocloeon triangulifer*) in relation to upper thermal limits. *Journal of Experimental Biology* 220: 2598-2605 doi:10.1242/jeb.156919
- Sweeney, B. W., D.H. Funk, R. W. Flowers, T. Gonzales, and A. Huamantincó. 2017. Cusco and Puerto Maldonado, Perú 1 Macroinvertebrates of rivers and creeks along the interoceanic Highway. *The Field Museum Guide* no. 843 <http://fieldguides.fieldmuseum.org/guides/guide/843>
- Sweeney, B. W. and J. G. Blaine. 2016. River conservation, restoration, and preservation: Rewarding private behavior to enhance the commons. *Freshwater Science* 35(3):755–763.
- Eldridge, W.H., B.W. Sweeney, and J.M. Law. 2015. Fish growth, physiological stress, and tissue condition in response to rate or temperature change during cool or warm diel thermal cycles. *Canadian Journal of Fisheries and Aquatic Science* 72:1-11.
- Sweeney, B. W. and J. D. Newbold. 2014. Streamside Forest Buffer Width Needed To Protect Stream Water Quality, Habitat, And Organisms: A Literature Review. *Journal of the American Water Resources Association* 50(3):560-584.
- Stein E.D., B.P. White, R.D. Mazon, J. K. Jackson, J.M. Battle, P.E. Miller, E.M. Pilgrim, and B. W. Sweeney. 2014. Does DNA Barcoding Improve Performance of Traditional Stream Bioassessment Metrics? *Freshwater Science* 33:302-311.
- Jackson, J.K., J. M. Battle, B.P. White, E.M. Pilgrim, E.D. Stein, P. E. Miller, and B.W. Sweeney. 2014. Cryptic biodiversity in streams – a comparison of macroinvertebrate communities based on morphological and DNA barcode identifications. *Freshwater Science* 33:312-324.
- Bott, T. L., J.K. Jackson, M. McTammany, J.D. Newbold, S. Rier, B.W. Sweeney, and J. Battle. 2012. Abandoned coal mine drainage and its remediation: Impacts on stream ecosystem structure and function. *Ecological Applications*. *Ecological Applications* 22: 2144-2163.
- Stribling, J., B. W. Sweeney, J. Morse, G. Corkum, G. Lester, S. Miller, R. Mitchell, B.

- Poulton, S. Strachan, and M. Wetzel. 2012. Taxonomic certification versus the scientific method: A rebuttal of Rogers (2012). *Zootaxa* 3359: 65-68.
- Clare, E. L., R. Brittany, R. Barber, B. W. Sweeney, P. D.N. Hebert, and M. B. Fenton. 2011. Eating local: Influences of habitat on the diet of little brown bats (*Myotis lucifugus*). *Molecular Ecology* 20(8): 1772-1780.
- Sweeney, B. W., J. Battle, J. K. Jackson and T. Dapkey. 2011. Can DNA barcodes of stream macroinvertebrates improve descriptions of community structure and water quality? *Journal of the North American Benthological Society* 30(1):195-216.
- Funk, D. H., B. W. Sweeney, and J. K. Jackson. 2010. Why stream mayflies can reproduce without males but remain bisexual: A case of lost genetic variation. *Journal of the North American Benthological Society* 29:1258-1266.
- Andrews, D. M., C. D. Barton, S. J. Czapka, R. K. Kolka, and B. W. Sweeney. 2010. Influence of tree shelters on seedling success in an afforested riparian zone. *New Forests* 39:157-167.
- Newbold, J. D. N., S. Herbert, B. W. Sweeney, and P. Kiry. 2010. Water quality functions of a 15 year old riparian forest buffer. *Journal of the American Water Resources Association*. 46 (2): 299-310.
- Jackson, J. K., J. M. Battle, and B. W. Sweeney. 2009. Monitoring the health of large rivers with macroinvertebrates: Do dominant taxa help or hinder the assessment? In *River Research and Applications* 26(8):931-947.
- Sweeney, B. W., R. W. Flowers, D. H. Funk, S. Ávila, and J. K. Jackson. 2009. Mayfly Communities in Two Neotropical Lowland Forests. *Aquatic Insects* 31:311-318.
- Funk, D. H., B. W. Sweeney, and J. K. Jackson. 2008. A taxonomic reassessment of the *Drunella lata* species complex (Ephemeroptera: Ephemerellidae) in northeastern North America based on genetic, morphometric and life history data. *Journal of the North American Benthological Society*: 27 (3): 647-663.
- Funk, D.H, B.W. Sweeney, and J.K. Jackson. 2008. A new parthenogenetic mayfly (Ephemeroptera:Ephemerellidae:*Eurylophella* Tiensuu) oviposits by abdominal bursting in the subimago. *Journal of the North American Benthological Society* 27 (2): 269 – 279.
- Horwitz, R. J., T. E. Johnson, P. F. Overbeck, T. K. O'Donnell, W. C. Hession, and B. W. Sweeney. 2008. Effects of riparian vegetation and watershed urbanization on fishes in streams of the mid-atlantic piedmont (USA). *Journal of the American Water Resources Association* 44(3):1-18.
- Sweeney, B. W. and J. G. Blaine. 2007. Resurrecting the in-stream side of riparian forests. *Journal of Contemporary Water Research and Education* 136:136: 17-27.
- Battle, J. M., J. K. Jackson, and B. W. Sweeney. 2007. Annual and spatial variation for macroinvertebrates in the Upper Mississippi River near Cape Girardeau, Missouri. *Fundamental and Applied Limnology Archiv fur Hydrobiologie* 168 (1):39-54.
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- Sweeney, B. W., S. J. Czapka, and C. Petrow. 2007. How planting method, weed abatement, and herbivory affect afforestation success. *Southern Journal of Applied Forestry* 31(2):85-92.
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- Blaine, J. B., B. W. Sweeney, and D. B. Arscott. 2006. Enhanced source water monitoring for New York City: Historical framework, political context, and program design. *Journal of the North American Benthological Society* 25:851-866.
- Sweeney, B. W., D. B. Arscott, C. L. Dow, J. G. Blaine, A. A. Aufdenkampe, T. L. Bott, J. K. Jackson, L. A. Kaplan, J. D. Newbold. 2006. Enhanced Source Water Monitoring for New York City: Summary and Perspective. *Journal of the North American Benthological Society* 25:1062-1067.
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- Funk, D. H., J. Jackson, and B. W. Sweeney. 2006. Taxonomy and genetics of the parthenogenetic mayfly *Centroptilum triangulifer* and its sexual sister *Centroptilum alamance* (Ephemeroptera: Baetidae). *Journal of the North American Benthological Society* 25:417-429.
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- Sweeney, B.W., T.L. Bott, J.K. Jackson, L.A. Kaplan, J.D. Newbold, L.J. Standley, W.C. Hession, R.J. Horwitz. 2004. Riparian Deforestation, Stream Narrowing, and Loss of Stream Ecosystem Services. *Proceedings of the National Academy of Sciences* 101(39):14132-14137.
- Sweeney, B. W. and S. J. Czapka. 2004. Riparian forest restoration: Why each site needs an ecological prescription. *Forest Ecology and Management* 192:361-373.
- Jackson, J. K., R. J. Horwitz, and B. W. Sweeney. 2002. Effects of *Bacillus thuringiensis israelensis* on Black Flies and Nontarget Macroinvertebrates and Fish in a Large River. *Transactions of the American Fisheries Society* 131:910-930.
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- Horwitz, R.J., W. Cully Hession, and B.W. Sweeney. 2000. Effects of forested and unforest riparian zones on stream fishes. Pp. 197-202 in *Proc. Amer. Water Resources Ass. Int. Conference on Riparian ecology and management in multi-land use watersheds*. Portland, Oregon, August, 2000.
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- Standley, L. J. and B. W. Sweeney. 1995. Organochlorine pesticides in stream mayflies and terrestrial vegetation of undisturbed tropical catchments exposed to long-range atmospheric transport. *Journal of the North American Benthological Society* 14:38-49.
- Jackson, J. K. and B. W. Sweeney. 1995. Egg and larval development times for 35 species of tropical stream insects from Costa Rica. *Journal of the North American Benthological Society* 14: 115-130.
- Jackson, J. K. and B. W. Sweeney. 1995. Research in tropical streams and rivers. Introduction. *Journal of the North American Benthological Society* 14:2-4.
- Jackson, J. K. and B. W. Sweeney. 1995. Present status and future directions of tropical stream research. *Journal of the North American Benthological Society* 14:5-11.
- Newbold, J. D., B. W. Sweeney, J. K. Jackson, and L. A. Kaplan. 1995. Concentrations and export of solutes from six mountain streams in northwestern Costa Rica. *Journal of the North American Benthological Society* 14:21-37.
- Jackson, J. K., B. W. Sweeney, T. L. Bott, J. D. Newbold, and L. A. Kaplan. 1994. Transport of *Bacillus thuringiensis* var. *israelensis* and its effect on drift and benthic densities of nontarget macroinvertebrates in the Susquehanna River, Northern Pennsylvania. *Canadian Journal of Fisheries and Aquatic Sciences*. 51:295-314.
- Funk, D. H., and B. W. Sweeney. 1994. The larvae of eastern North American *Eurylophella Tiensuu* (Ephemeroptera: Ephemerellidae). *Transactions of the American Entomological Society* 120: 209-286.
- Standley, L. J., B. W. Sweeney, and D. H. Funk. 1994. Maternal transfer of chlordane and its metabolites to the eggs of a stream mayfly *Centroptilum triangulifer*. *Environmental Science and Technology* 28:2105-2111.
- Newbold, J.D., B. W. Sweeney, and R. L. Vannote. 1994. A model for seasonal synchrony in stream mayflies. *Journal North American Benthological Society* 13:3-18.
- Sweeney, B. W. 1993. Effects of streamside vegetation on macroinvertebrate communities of White Clay Creek in Eastern North America. *Proceedings of The Academy of Natural Sciences of Philadelphia* 144:291-340.
- Sweeney, B. W., D. H. Funk, and L. J. Standley. 1993. Use of the stream mayfly *Cloeon triangulifer* as a bioassay organism: Life history response and body burden following exposure to technical chlordane. *Environmental Toxicology and Chemistry* 12:115-125.
- Sweeney, B. W. 1992. Streamside forests and the physical, chemical, and trophic characteristics of piedmont streams in Eastern North America. *Water Science and Technology* 26:2653-2673.
- Sweeney, B. W., D. H. Funk, and L. J. Standley. 1992. Evaluation of a stream mayfly, *Cloeon triangulifer*, as a bioassay organism: Bioconcentration, metabolism, and life history response during chronic exposure to chlordane. *Environmental Toxicology and Chemistry* 12:115-125.
- Sweeney, B. W. and D. H. Funk. 1991. Population genetics of the burrowing mayfly *Dolania americana*: Geographic variation and the presence of a cryptic species. *Aquatic Insects* 13 (1):17-27.
- Sweeney, B. W., J. K. Jackson, J. D. Newbold, and D. H. Funk. 1990. Climate change and the life histories and biogeography of aquatic insects in Eastern North America. pp. 143-176.

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- Funk, D. H. and B. W. Sweeney. 1990. Electrophoretic analysis of species boundaries and phylogenetic relationships of taeniopterygid stoneflies (Plecoptera). Transactions of the American Entomological Society 116(3): 727-751.
- Funk, D. H., B. W. Sweeney, and R. L. Vannote. 1988. Electrophoretic study of Eastern North American Eurylophella (Ephemeroptera: Ephemerellidae) with the discovery of morphologically cryptic species. Annals of the Entomological Society of America 81:174-186.
- Sweeney, B. W., D. H. Funk, and R. L. Vannote. 1987. Genetic variation in stream mayfly (Insecta: Ephemeroptera) populations in eastern North America. Annals of the Entomological Society of America 80:600-612.
- Sweeney, B. W. and R. L. Vannote. 1987. Geographic parthenogenesis in the stream mayfly Eurylophella funeralis in eastern North America. Holarctic Ecology 10:52-59.
- Sweeney, B. W., D. H. Funk, and R. L. Vannote. 1986. Population genetic structure of two mayflies (Ephemerella subvaria, Eurylophella verisimilis) in the Delaware River drainage basin. Journal of the North American Benthological Society 5:253-262.
- Sweeney, B. W. and R. L. Vannote. 1986. Growth and production of a stream stonefly: Influences of diet and temperature. Ecology 67:1396-1410.
- Sweeney, B. W., R. L. Vannote, and P. J. Dodds. 1986. Effects of temperature and food quality on growth and development of a mayfly, Leptophlebia intermedia. Canadian Journal of Fisheries and Aquatic Sciences 43:12-18.
- Sweeney, B. W., R. L. Vannote, and P. J. Dodds. 1986. The relative importance of temperature and diet to larval development and adult size of the winter stonefly Soyedina carolinensis (Plecoptera: Nemouridae). Freshwater Biology 16:39-48.
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- Sweeney, B. W. and R. L. Vannote 1984. Influence of food quality and temperature on life history characteristics of the parthenogenetic mayfly Cloeon triangulifer. Freshwater Biology 14:621-630.
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- Sweeney, B. W. 1976. A diurnally fluctuating thermal system for studying the effect of temperature on aquatic organisms. *Limnology and Oceanography* 21(5):758-763.