

Donald F. Charles

Education

- Ph.D. 1982 Indiana University. (Ecology and Evolutionary Biology; Limnology)
- M.S. 1974 Cornell University. (General Ecology; Aquatic Sciences)
- B.S. 1971 SUNY College of Environmental Science and Forestry (Biological Sciences)
- B.S. 1971 Syracuse University, cum laude

Positions and Professional Experience

Academy of Natural Sciences of Philadelphia

- 1/06-Present Ruth Patrick Chair in Environmental Science
- 1/92-Present Leader, Phycology Section, PCER, ANSP
- 10/95-12/96 Acting Director, Patrick Center for Environmental Research
- 1/92-4/93 Director, Patrick Center for Environmental Research

U.S. EPA Environmental Research Laboratory (ERL) - Corvallis

- 3/90-8/90 Ecological Statistics Team Senior Technical Consultant (Acting team leader)
- 5/89-3/90 Aquatic Team Technical Director (team leader); U.S. EPA ERL-Corvallis.
- 10/87-5/91 Co-Project Coordinator of the PIRLA II Project; U.S. EPA (about \$800K).
- 1/87-5/91 Project Coordinator, Acid Deposition Regional Case Studies Project; U.S. EPA (about \$750K).
- 8/82-12/91 Co-Project Coordinator with Dr. Donald R. Whitehead, of the PIRLA project (Paleoecological Investigation of Recent Lake Acidification) (EPRI, \$2.7 mil.)
- 8/87-12/91 Limnologist, U.S. EPA ERL - Corvallis-Cooperative Agreement with Indiana U.

Indiana University

- 9/77-8/87 Associate Scientist, Assistant Scientist, Research Associate, Associate Instructor and Research Assistant in the Department of Biology.

Adirondack Park Agency

- 7/73-9/77 Project Analyst and Senior Project Analyst (Aquatic Ecologist), Ray Brook, NY.

Other Professional Experience

Over 50 peer-reviewed scientific articles, and more than 40 other papers and technical reports. Over 80 presentations at scientific meetings and university seminars. Associate Editor, Journal of Paleolimnology (1988-1999). Certified Senior Ecologist, ESA. Led creation of website to distribute research results (<http://diatom.acnatsci.org>). Three NSF REU students.

Selected Grants and Contracts

"Diatoms as indicators of biological integrity in streams and rivers: development and evaluation using advanced quantitative techniques", U.S. Environmental Protection Agency, Exploratory Grants Program; October 1993 - October 1995; \$261,238. With David Hart and Frank Acker.

"Development of Periphyton Biocriteria and Periphyton Bioassessment Protocols for Montana Lakes and Wetlands", Montana Department of Health and Environmental Sciences; April, 1994 - March 1995; \$39,858. With Frank Acker and N.A. Roberts. \$15,000 additional funding 1997.

"Creation of a Diatom Paleolimnology Data Cooperative", NOAA, Office of Global Programs, Paleoclimate Program". With Roger Sweets (Indiana University) and Tim Sullivan (E&S Environmental Chemistry); \$90,000 over three year period.

Several projects to study Jackson River algal biomass, Westvaco Corp, Covington, VA, 1998 - 2006, more than \$500,000.

"A Diatom Paleolimnology Data Cooperative for Paleoclimate Research", National Science Foundation, Earth System History, 1998 - 2001, \$134,000; 2004 - 2007, \$156,000.

"Algal Research and Ecological Synthesis for the U.S.G.S. National Water Quality Assessment Program (NAWQA)", U.S. Geological Survey, Four year Co-operative Agreement I, 1999 - 2002, \$2 million; Agreement II, 2003 - 2007, \$2.2 million; Agreement III, 2007, \$380,000.

"Understanding the Relationships Between Natural Conditions and Nutrient Loading on Eutrophication: Algal Indicators of Eutrophication for New Jersey Streams", New Jersey Department of Environmental Protection, 2000 - 2004, approximately \$325,000.

Analysis of Periphyton Samples for an Acid Mine Drainage Study of the West Branch Susquehanna River, U.S.G.S. Northern Appalachian Research Laboratory, Wellsboro, PA, 2003-2004, \$25,979.

Several studies to analyze samples and develop algal indicators for states (MT, ID, NM, ME, VA)

Selected publications in peer reviewed journals

Charles, D.F. 1985. Relationships between surface sediment diatom assemblages and lake water characteristics in Adirondack Mountain (N.Y.) lakes. *Ecology* 66:994-1011.

Charles, D.F. 1990. A checklist for describing and documenting diatom and chrysophyte calibration data sets and equations for inferring water chemistry. *Journal of Paleolimnology* 3:175-178.

Charles, D.F., J.P. Smol and D.R. Engstrom. 1994. Paleolimnological approaches to biological monitoring. Pages 233-293 *in* S. Loeb and A. Spacie, eds. *Biological Monitoring of Aquatic Systems*. CRC Press, Boca Raton, FL.

Charles, D.F. and J.P. Smol. 1994. Long-term chemical changes in lakes: Quantitative inferences from biotic remains in the sediment record. Pages 3-31 *in* L. Baker, ed. *Environmental Chemistry of Lakes and Reservoirs*. Advances in Chemistry Series 237, American Chemical Society, Washington, D.C.

Potapova, M.G. and D.F. Charles. 2002. Benthic diatoms in USA rivers: distributions along spatial and environmental gradients. *Journal of Biogeography* 29: 167-187.

- Potapova, M., and D.F. Charles. 2003. Distribution of benthic diatoms in U.S. rivers in relation to conductivity and ionic composition. *Freshwater Biology* 48: 1311-1328.
- Potapova, M., D.F. Charles, K.C. Ponader and D.M. Winter. 2004. Quantifying species indicator values for trophic diatom indices: a comparison of approaches. *Hydrobiologia* 517: 25-41.
- Potapova, M., and D.F. Charles. Potential use of rare diatoms as environmental indicators in U.S. rivers. Pages 281-295, In Proceedings of the 17th International Diatom Symposium. Ottawa, Canada, 2002. M. Poulin, ed., Biopress Limited, Bristol.
- Potapova, M. and D.F. Charles. 2005. Choice of substrate in algae-based water-quality assessment. *Journal of the North American Benthological Society* 24: 415-427.
- Charles, D.F., F.W. Acker, D.D. Hart, C.W. Reimer, and P.B. Cotter. Large-scale regional variation in diatom-water chemistry relationships: rivers of the eastern USA. *Hydrobiologia* 561:27-57.
- Ponader, K.C., D.F. Charles, and T.J. Belton. 2007. Diatom-based TP and TN inference models and indices for monitoring nutrient enrichment of New Jersey streams. *Ecological Indicators* 7: 79-93.
- Potapova, M. and D.F. Charles. 2007. Diatom metrics for monitoring eutrophication in rivers of the United States. *Ecological Indicators* 7: 48-70.
- Other significant publications
- Charles, D.F. (ed). 1991. *Acidic Deposition and Aquatic Ecosystems: Regional Case Studies*. Springer-Verlag, N.Y., N.Y., 747 pp.
- Camburn, K.E. and D.F. Charles. 2000. Diatoms of low-alkalinity lakes in the Northeastern United States. (A photographic Iconograph of nearly 1000 specimens). Special Publ.18, The Academy of Natural Sciences of Philadelphia, Philadelphia, PA. 152 pp.
- Charles, D.F. 2000. Further evaluation of diatom periphyton as indicators of cultivation and grazing impairment in Montana wetlands. Report No. 00-10R. Patrick Center for Environmental Research, ANSP, Philadelphia, PA. 39 pp.
- Charles, D.F., P. Cotter, E.A. Morales, M. Potapova, K. Sprouffske. 2002. ANPS Algae Image Database. Website at: <http://diatom.acnatsci.org/AlgaeImage/>
- Charles, D.F., K. Sprouffske, T. Sullivan, P. R. Sweets, P. Cotter, and K. Vaché. 2002. Diatom Paleolimnology Data Cooperative. Website at: <http://diatom.acnatsci.org/dpdc/>
- Charles, D.F., C.A. Knowles, and R.S. Davis, eds. 2002. Protocols for the analysis of algal samples collected as part of the U.S. Geological Survey National Water-Quality Assessment Program.

Report No. 02-06, Patrick Center for Environmental Research, ANSP, Philadelphia, PA. 124 pp. (<http://diatom.acnatsci.org/nawqa/>)