

**Bruce R. Hargreaves**

**A. VITAE:**

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**Education:** Ph.D. 1977 University of California, Berkeley  
B.A. 1970 Pomona College

**Professional Employment:**

1991-present Associate Professor, Dept. of Earth & Environmental Sciences, Lehigh University  
1984-91 Associate Professor, Biology Department, Lehigh University  
1977-84 Assistant Professor, Biology Department, Lehigh University

**B. REFEREED PUBLICATIONS (I=invited; C=contributed):**

**Book Chapters**

- (I) **Hargreaves, B.R.**, 2003. Water Column Optics and Penetration of UVR, pp.59-105 IN: *UV Effects in Aquatic Organisms and Ecosystems*, E.W. Helbling & H. E. Zagarese (eds), Comprehensive Series in Photochemical and Photobiological Sciences, Royal Society of Chemistry, Cambridge, UK, 575 p.
- (I) **Hargreaves, B.R.** 1995. Mysid Crustaceans, p. 59-68 in: L.E. Dove and R.M. Nyman (eds.): *Living Resources of the Delaware Estuary*. The Delaware Estuary Program, 529 pp.
- (C) Herman, S. S., and **B. R. Hargreaves**. 1988. First order estimate of secondary productivity in the Delaware Estuary. Pages 148-156 in S. K. Majumdar, E. W. Miller and L. E. Sage, editors. *Ecology and Restoration of the Delaware River Basin*. Penn. Acad. Science. (431 pp.)
- (I) **Hargreaves, B. R.** 1981. Energetics of Crustacean Swimming. Pages 453-490 in C. F. Herreid and C. R. Fourtner, editors. *Locomotion and Energetics in Arthropods*. Plenum Press. (546 pp.)

**Journal Articles and Refereed Chapters in Conference Proceedings**

- (I) **Hargreaves, B.R.**, S. F. Girdner, M. W. Buktenica, R.W. Collier, E. Urbach, G. L. Larson, 2007. Ultraviolet Radiation and Bio-optics in Crater Lake, Oregon, *Hydrobiologia* 574:107–140 (<http://dx.doi.org/10.1007/s10750-006-0348-0>).
- (C) Larson, G.L., R.L. Hoffman, B.R. Hargreaves, R.W. Collier, 2007. Predicting Secchi disk depth from average beam attenuation in a deep, ultra-clear lake. *Hydrobiologia* 574:141–148 (<http://dx.doi.org/10.1007/s10750-006-0349-z>).
- (C) Galster, J.C., F.J. Pazzaglia, **B.R. Hargreaves**, D.P. Morris, S.C. Peters, R.N. Weisman, 2006. Effects of urbanization on watershed hydrology: The scaling of discharge with drainage area, *Geology* 34 ( 9): 713–716.

- (C) Cooke, S. L. C. E. Williamson, **B. R. Hargreaves**, D. P. Morris, 2006. Beneficial and detrimental interactive effects of dissolved organic matter and ultraviolet radiation on zooplankton in a transparent lake, *Hydrobiologia* 568:15-28.
- (C) Leech, D.M., C.E. Williamson, R.E. Moeller, **B.R. Hargreaves**, 2005. Effects of ultraviolet radiation on the seasonal vertical distribution of zooplankton: a database analysis, *Archiv für Hydrobiologie* 162(4):445-464.
- (C) Williamson, C.E., P.J. Neale, G. Grad, H.J. De Lange, and **B.R. Hargreaves**, 2001. Beneficial and detrimental effects of UV on aquatic organisms: implications of spectral variation. *Ecological Applications* 11(6): 1843-1857.
- (C) Osburn, C.L., H.E. Zagarese, D.P. Morris, **B.R. Hargreaves**, W.E. Cravero, 2001. Calculations of spectral weighting functions for the solar photobleaching of chromophoric dissolved organic matter in temperate lakes. *Limnol. Oceanogr.* 46(6): 1455-1467.
- (C) Williamson, C.E., O.G. Olson, S.E. Lott, N.D. Walker, D.R. Engstrom, **B.R. Hargreaves**, 2001. Ultraviolet radiation and zooplankton community structure following deglaciation in Glacier Bay, Alaska. *Ecology* 82(6): 1748-1760.
- (C) Williamson, C.E., **B.R. Hargreaves**, P.S. Orr, and P.A. Lovera. 1999. Does UV play a role in changes in predation and zooplankton community structure in acidified lakes? *Limnol. Oceanogr.* 44:774-783.
- (C) Morris, D.P. and **B.R. Hargreaves**. 1997. The role of photochemical degradation of dissolved organic carbon in regulating the UV transparency of three lakes on the Pocono Plateau. *Limnol. Oceanogr.* 42(2):239-249.
- (C) Ayoub, L.M., **B.R. Hargreaves** and D.P. Morris. 1996. UVR attenuation in lakes: Relative contribution of dissolved and particulate material. *SPIE* 2963:338-343.
- (C) Morris, D.P., H.E. Zagarese, C.E. Williamson, E.G. Balseiro, **B.R. Hargreaves**, B. Modenutti, R. Moeller and C. Queimalinos. 1995. The attenuation of solar UV radiation in lakes and the role of dissolved organic carbon. *Limnol. Oceanogr.* 40:1381-1391.
- (C) Schulze, P.C., C.E. Williamson and **B.R. Hargreaves**. 1995. Evaluation of a remotely operated vehicle (ROV) as a tool for studying the distribution and abundance of zooplankton. *J. Plankton Res.* 17(6):1233-1244.
- (I) Kirk, J.T.O., **B.R. Hargreaves**, D.P. Morris, R. Coffin, B. David, D. Frederickson, D. Karentz, D. Lean, M. Lesser, S. Madronich, J.H. Morrow, N. Nelson and N. Scully. 1994. Measurement of UVB radiation in two freshwater lakes: an instrument intercomparison. *Arch. Hydrobiol. Beih. Ergbn. Limnol.* 43:71-99.
- (C) Williamson, C.E., H.E. Zagarese, P.C. Schulze and **B.R. Hargreaves**. 1994. The impact of short-term exposure to UVB radiation on zooplankton in north temperature lakes. *J. Plankton Res.* 16:205-218.
- (C) Schulze, P. C., J. R. Strickler, B. I. Bergstrom, M. S. Berman, P. Dohaghay, S. Gallager, J. F. Haney, **B. R. Hargreaves**, U. Kils, G. A. Paffenhofer, S. Richman, H. A. Vanderploeg, W. Welsch, D. Wethey, and J. Yen. 1992. Video systems for in situ studies of zooplankton. Pages 1-21 in W. G. Sprules, P. C. Schulze and C. E. Williamson, editors. *Advanced techniques for in situ studies of zooplankton abundance, distribution, and behavior*. Vol. 36. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart. (140 pp)
- (C) Sprules, W. G., B. Bergstrom, H. Cyr, **B. R. Hargreaves**, S. S. Kilham, H. J. MacIsaac, K. Matsushita, R. S. Stemberger, and R. Williams. 1992. Non-video optical instruments for studying zooplankton distribution and abundance. Pages 45-58 in W. G. Sprules, P. C.

Schulze and C. E. Williamson, editors. *Advanced techniques for in situ studies of zooplankton abundance, distribution, and behavior*. Volume 36. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart. (140 pp.)

- (I) **Hargreaves, B. R.**, and J. N. Kraeuter. 1990. The state of living resources in the Delaware Estuary. Pages 65-108 in J. H. Sharp, editor. *Individual Papers from October 1989 Delaware Estuary Program Workshop*. U.S. Environmental Protection Agency. (123 pp.)
- (C) Smith, R. L., and **B. R. Hargreaves**. 1985. Respiratory rate in the mysid *Neomysis americana*: effects of naphthalene, temperature and other factors. Pages 477-504 in F. J. Vernberg, F. P. Thurberg, A. Calabrese and W. B. Vernberg, editors. *Marine Pollution and Physiology: recent advances*. University of South Carolina Press. (545 pp.)
- (C) Smith, R.L., and **B.R. Hargreaves**, 1984. Oxygen consumption in *Neomysis americana* (Crustacea: Mysidacea), and the effects of naphthalene exposure. *Marine Biology* **79**:109-116.
- (C) Herman, S. S., **B. R. Hargreaves**, R. A. Lutz, L. W. Fritz, and C. E. Epifanio. 1983. Zooplankton and Parabenthos, pp. 157-168. Pages 157-168 in J. H. Sharp, editor. *The Delaware Estuary: research as background for estuarine management and development*. University of Delaware College of Marine Studies and New Jersey Marine Science Consortium, A report to the Delaware River and Bay Authority. (326 pp.)
- (C) Smith, R.L., **B.R. Hargreaves**, 1983. A simple toxicity apparatus for continuous flow with small volumes: demonstration with mysids and naphthalene. *Bulletin of Environmental Contamination and Toxicology* **30**:406-412.
- (C) **Hargreaves, B. R.**, R. L. Smith, C. Q. Thompson, and S. S. Herman. 1982. Toxicity and accumulation of naphthalene in the mysid: *Neomysis americana* (Smith) and effects of environmental temperature. Pages 391-412 in W. B. Vernberg, A. Calabrese, F. P. Thurberg and F. J. Vernberg, editors. *Physiological Mechanisms of Marine Pollutant Toxicity*. Academic Press. (564 pp.)

#### **Other Creative Activities: Patents & Inventions**

- Portable instrument for rapid measurement of spectral reflectance, transmittance, and absorption of suspended particles and thin specimens (patent application in progress).

#### **C. HONORS & AWARDS**

#### **D. RESEARCH FUNDING**

- EPA grant \$825,850, 2003-2005, “Assessing the interactive effects of landscape, climate, and UV radiation on river ecosystems: Modeling transparency to UV radiation and the response of biota”. EPA S.T.A.R. Program. Morris (PI), Hargreaves, Pazzaglia, Weisman, Williamson (co-Pis). The budget contains 3 graduate support packages per year for 3 years.
- National Park Service & USGS, 8/99-03. Ship support to conduct optical survey of Crater Lake, Oregon and office expenses at Oregon State University, April-July 2002 (host G. Larsen, Oregon State Univ. & USGS).
- IAI-CRN, \$119k (Lehigh share \$36.4k), 1999-2004. InterAmerican Institute for Global Change Research, Hargreaves & Morris as co-PI's & Zagarese as PI. Ecogeographic distribution of UV optical properties in lakes of mid-latitude South America (part of “Enhanced ultraviolet-B radiation in natural ecosystems as an added perturbation due to ozone depletion”). Project will explore solar UV effects on aquatic systems longitudinal and elevational gradient in Chile and Argentina, including development of bio-optical climate change indicators for lakes.

- NSF, \$690,117, 7/96-10/99. PI, Morris, co-pi's Hargreaves, Moeller & Williamson. Causes and consequences of seasonal changes in transparency of lakes to ultraviolet radiation.
- Culpeper Foundation, \$199,938, 1999-2000. PI, Meltzer, Hargreaves, Moses, Morris, co-PI's. The Lehigh Earth Observatory (LEO) Project: Transforming the curriculum in Earth and Environmental Sciences (with A.S. Meltzer, D.P. Morris, C.O. Moses. (BRH role: \$57k for portable computing platform, Lehigh weather stations and data logger, fluorometer for field/lab).
- Ventures Fund, \$2,000, 6/99-6/00: Living Lab ILE ( Lennon, Hargreaves, Munley, Sterrett).
- NSF, \$29,500. 7/97-10/98 ( Morris and Hargreaves). Attenuation of solar radiation in lakes of southern Argentina.
- NSF REU Site grant, 2/95-12/97. (Morris PI, Moeller, co-PI). REU Site: Field research and database development in freshwater environmental science. (BRH role: although not officially listed as PI or co-PI, I wrote part of the proposal, planned and carried out the database instruction, supervised interns, and shared the responsibility with Moeller for managing summer logistics).

## **E. EDITORIAL BOARD MEMBERSHIP**

## **F. SCHOLARLY PRESENTATIONS**

### **Organized/chaired sessions**

- 8 April 2006, Lehigh Valley Evolution & Ecology Symposium, (co-organizer of the symposium with Murray Itzkowitz; BRH also chaired one session and evaluated student posters for awards)
- 30-31 March 2006. Global Citizenship Best Practices Across the Nation Workshop. (co-organizer with Hannah Stewart-Gambino; BRH also chaired a session: "Strategies for using and encouraging the widespread use of technology")
- March-April 2006, EES Department Foster Hewett Lecture Series (BRH organized four days days of lectures and social events on the topic of biological evolution with help from a campus-wide committee (March 06: Andy Knoll; April 06: Eugenie Scott. BRH also raised \$2,500 from campus sources to help fund the costs and handled all logistics.)
- 12 November 2005, The Future of Scientific Publishing, one-day Symposium co-sponsored by Lehigh Libraries and Lehigh Sigma Xi chapter (BRH was a co-organizer).
- Feb. 2003. UV Optics session at the ASLO Aquatic Sciences Meeting; session chaired by BRH (Salt Lake City, Feb 2003).
- 3 May 2004. As president of the Lehigh chapter of Sigma Xi, BRH organized a dinner & lecture by Dr. Brian Strom, UPENN Medical School ("What are Our Drugs Truly Doing to Our Patients? Lessons from Pharmacoepidemiology").
- 28 November 2001. As secretary of the Lehigh chapter of Sigma Xi, BRH organized a "Forum on Bioterrorism: Scientific and Public Health Issues", 7:30-9:00 PM, (invited public health and scientific experts to speak. Featured Dr. Charles Haas, Professor of Environmental Engineering at Drexel Univ, and expert on anthrax decontamination).
- 23 April 2001. As secretary of the Lehigh chapter of Sigma Xi, BRH organized a dinner & lecture by Dr. Ronald Mickens, Clark Atlanta University: "A 'Big-Bang' Vaccination Strategy".

## Invited Lectures

- EES Department Research Lecture, Lehigh University (9/06)
- Lehigh Valley Evolution and Ecology Symposium (4/06)
- Sigma Xi Research Lecture, Lehigh Univ. (3/04)
- Crater Lake Workshop, OSU (2/03)
- Oregon State University research seminar (7/02)
- Sigma Xi Lehigh Chapter research seminar (3/01)
- Lehigh EES Department research seminar (3/00)
- University of Delaware research seminar (3/99)
- Flowing Toward the Future Conference on Delaware River Basin, 11/99
- Lafayette College Geosciences research seminar (2/98)
- Delaware Estuary Program Workshop, Cherry Hill, NJ, 11/98
- Delaware Estuary Program Conference, West Chester, PA, 5/97
- Lacawac Sanctuary Public Lecture Series, 7/97
- URISA-96 Conference, NJ, 1/96
- Drexel Univ. research seminar, Phila., 1/96
- Great Decisions seminar, Bethlehem, 3/96 (Global water supply)

## Other presentations (recent oral or poster presentations with published abstracts)

- **B.R. Hargreaves**, 2006. Adaptations of Phytoplankton to Sunlight and Other Optical Properties of Aquatic Ecosystem Particles Detected With a Portable Integrating Sphere Version of QFT. *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract B11C-1042
- HAIGHT, Shannon L., **HARGREAVES, Bruce**, and PETERS, Steve, 2006. CHANGES IN THE QUANTITY AND QUALITY OF DOC DURING STORM EVENTS AS A FUNCTION OF LAND COVER. Poster at GSA, 25 October 2006.
- LUEBBE, Andrea Jo, and **HARGREAVES, Bruce R**, 2006. BOG WETLAND HYDROLOGIC RESPONSE TO STORM RUNOFF: DOC CONCENTRATION AND CHEMICAL PROPERTIES. Poster at GSA, 25 October 2006.
- **B.R. Hargreaves**, Moeller, R.E., Sopka, C., Morris, D.P., June 2006. DOC & CDOM DYNAMICS IN SURFACE AND BOTTOM WATERS OF TWO SMALL MID-LATITUDE LAKES INFLUENCE UV TRANSPARENCY. ASLO Aquatic Sciences Meeting, Victoria B.C.
- Moeller, R.E., **Hargreaves, B.R.**, Morris, D.P., Williamson, C.E., June 2006. CORRELATIONS OF RAINFALL, DOC, AND PH TO DECREASING TRENDS OF UV TRANSPARENCY IN TWO SLIGHTLY ACIDIC LAKES, ASLO Aquatic Sciences Meeting, Victoria B.C.
- Morris, D.P., Horacio E. Zagarese, **Hargreaves, B.R.** June 2006. VARIABILITY IN THE RATE OF CDOM PHOTOBLEACHING AND ITS CONTROL. ASLO Aquatic Sciences Meeting, Victoria B.C.
- Kendig, C, A, Porter, J, A, Peters, S, C, **Hargreaves, B, R**, Morris, D, P, June 2006. LABORATORY MANIPULATION OF LAKE WATER CHEMISTRY TO EXAMINE

CHANGES IN THE SPECTRAL PROPERTIES OF CHROMOPHORIC DISSOLVED ORGANIC MATTER, ASLO Aquatic Sciences Meeting, Victoria B.C.

- P. Belmont, **B.R. Hargreaves**, and D.P. Morris, June 2006. Empirical model for estimating attenuation of ultraviolet radiation in streams, NABS Annual meeting, Anchorage, Alaska.
- Shannon Haight, **Bruce R. Hargreaves**, Stephen C. Peters, 2006. Stream UV transparency varies with weather and land cover: A paired watershed approach to modeling the concentration and source of dissolved organic carbon and major cations in stream water during stormflow and baseflow. Poster at Lehigh Valley Evolution and Ecology Symposium.
- **Bruce R. Hargreaves**, Donald P. Morris, Frank J. Pazzaglia, Richard N. Weisman, Craig E. Williamson, Stephen C. Peters, Assessing the effects of land use, climate, and UV radiation on river ecosystems in northeastern USA (4 Nov 2005), EPA STAR Project Review (Washington DC).
- **Bruce R. Hargreaves**, Girdner, S.F., Buktenica, M.W., Collier, R.W., Urbach, E., Larson, G. L., 2005. Ultraviolet transparency in Crater Lake, Oregon: decadal cycles during the past century. American Society of Limnology and Oceanography (Aquatic Sciences international meeting, Santiago Spain)
- **Bruce R. Hargreaves**, S. F. Girdner, M. W. Buktenica, R.W. Collier, E. Urbach, G. L. Larson, 2005. Ultraviolet Radiation in Crater Lake Oregon, AAAS Pacific Division Meeting, Ashland OR, June 2005.
- S. C. Peters, **B. R. Hargreaves**, S. L. Haight, 2005. Solute behavior in agricultural vs forested watersheds during storm events: Implications for DOC sources, May 2006 15th Annual Goldschmidt Conference, Moscow Idaho.
- Chris Forstall, Shannon Haight, **Bruce R. Hargreaves**, 2005. USING ASTER DATA TO QUANTIFY RIPARIAN CANOPY AREA FOR A RANGE OF STREAM ORDERS IN EASTERN PENNSYLVANIA, USA, GSA NE Regional Meeting, March 2005
- Shannon Haight, Chris Forstall, **Bruce R. Hargreaves**, 2005. Ground and Satellite Estimates of the Penetration of Ultraviolet and Visible Radiation Through Forest Canopy in Eastern Pennsylvania, USA, GSA NE Regional Meeting, March 2005.
- **Bruce R. Hargreaves**, Stephen C. Peters (scp2@lehigh.edu), Shannon L. Haight, 2005. UV ATTENUATION IN STREAMS: STORM RESPONSE OF GROUNDWATER, RUNOFF, AND CANOPY THROUGHFALL. GSA NE Regional Meeting, March 2005, Saratoga Springs, NY.
- Chris Forstall, Shannon Haight, **Bruce R. Hargreaves**, 2005. USING ASTER DATA TO QUANTIFY RIPARIAN CANOPY AREA FOR A RANGE OF STREAM ORDERS IN EASTERN PENNSYLVANIA, USA. GSA NE Regional Meeting, March 2005, Saratoga Springs, NY.
- Shannon Haight, Chris Forstall, **Bruce R. Hargreaves**, 2005. Ground and Satellite Estimates of the Penetration of Ultraviolet and Visible Radiation Through Forest Canopy in Eastern Pennsylvania, USA. GSA NE Regional Meeting, March 2005, Saratoga Springs, NY.
- D. Morris, **B. Hargreaves**, F. Pazzaglia, R. Weisman, C. Williamson, 2004. ASSESSING THE INTERACTIVE EFFECTS OF LANDSCAPE, CLIMATE, AND UV RADIATION ON RIVER ECOSYSTEMS: MODELING TRANSPARENCY TO UVR AND THE RESPONSE OF BIOTA, EPA STAR Symposium, Washington DC, 16

June04

- Forstall, C.W., **Hargreaves, B. R.** and Nichols, L.M, 2004. QUANTITATIVE MODELING OF DOC TRANSPORT IN THE LEHIGH RIVER WATERSHED, Sigma Xi Regional Symposium, St. Joseph's University, April 2004.
- Nichols, L. M., Forstall, C.W., **Hargreaves, B.R.**, 2004. QUALITATIVE PROPERTIES OF CDOM IN THE LEHIGH RIVER WATERSHED, Sigma Xi Regional Symposium, St. Joseph's University, April 2004.
- **Hargreaves, B.R.**, Forstall, C.W., Nichols, L.M., Morris, D.P., Pazzaglia, F.J., and Williamson, C.E., Weisman, 2004. R.N., LAKE MODEL FOR ULTRAVIOLET ATTENUATION ADAPTED TO STREAMS, International Society of Limnology (SIL), Finland, August 04.
- **Hargreaves, B.R.**, J.H. Morrow, G.L. Larson, S.F. Girdner, R.W. Collier, 2003. Ultraviolet measurements in Crater Lake, Oregon (USA) yield new estimates of UV attenuation and absorption by pure water. ASLO Aquatic Sciences Meeting, February 2003.
- Moeller, R.E., **B.R. Hargreaves**, D.P. Morris, C.E. Williamson, 2003. Seasonal, year-to-year and long term controls of UV attenuation in two mid-latitude lakes of contrasting wetland drainage and dissolved organic carbon content. ASLO Aquatic Sciences Meeting, February 2003.
- **Hargreaves, B.R.**, Morris, D.P., Zagarese, H.E., Ferraro, M., Añon Suarez, D., Soto, 2002. D., UV Attenuation & CDOM properties of mid to high latitude southern hemisphere lakes, ASLO meeting, Victoria, June 2002.
- Zagarese, H., D. Añón Suárez, V. Rocco, P. Pérez, M. Ferraro, D. Soto, P. de Los Ríos, J. Jaramillo, Arismendi, M. Ruiz, **B. Hargreaves**, D. Morris, 2001. UV attenuation and photolability of dissolved organic matter in temperate lakes of South America, IAI Meeting, Brazil, November, 2001.
- Williamson, C.E., P.J. Neale, G. Grad, H. J. De Lange, **B. R. Hargreaves**, 2001. Beneficial and detrimental effects of UV radiation: implications of variation in the spectral composition of environmental radiation for aquatic organisms. Aquatic Sciences Meeting of ASLO, Albuquerque NM, 2/01 (abstract).
- **Hargreaves, B.R.**, C.L. Osburn, D.P. Morris, R.E. Moeller, 2001. Spectral slope response to solar and biotic processes: Comparison of model with estimates from CDOM absorption and UV attenuation measurements. Aquatic Sciences Meeting of ASLO, Albuquerque NM, 2/01 (abstract).
- Osburn, C.L., D.P. Morris, **B.R. Hargreaves**, H.E. Zagarese, 2001. Modeling the contribution of UV radiation to the photobleaching of CDOM in temperate lakes from North and South America. Aquatic Sciences Meeting of ASLO, Albuquerque NM, 2/01 (abstract).
- Williamson, C.E., P.J. Neale, G. Grad, H. J. De Lange, **B. R. Hargreaves**, 2001. Beneficial and detrimental effects of UV radiation: implications of variation in the spectral composition of environmental radiation for aquatic organisms. Aquatic Sciences Meeting of ASLO, Albuquerque NM, 2/01 (abstract).
- Osburn, C.L., D.P. Morris, **B.R. Hargreaves**, 2000. Spectral dependence of photobleaching of CDOM in lake ecosystems. Pacificchem 2000 Meeting of the International Chemical Congress of Pacific Basin Societies, Hawaii, 12/00 (abstract).

- **Hargreaves, B.R.**, D.P. Morris, R.E. Moeller, C.E. Williamson, 2000. Seasonal Variation of Ultraviolet Transparency In Lakes. International meeting of ASLO, Copenhagen, 5/00 (abstract).
- **Hargreaves, B. R.**, C. Sopka, D. P. Morris, 2000. Water Column Experiments With CDOM: Seasonal Changes in Photochemical Reactivity and Daily Photobleaching Rates (EOS, ASLO/AGU Ocean Sciences Meeting, San Antonio, 2/2000).
- **Hargreaves, B.R.** and K. Farkas. 1999. Lake evaporation: short-term mass transfer and energy budget models tested with lake and pan data. Abstract, ASLO 1999 Meeting, Santa Fe.
- Osburn, C.L., D.P. Morris, and **B.R. Hargreaves**, 1999. Modeling the spectral dependence of photobleaching of DOM using absorbance and fluorescence. Abstract, ASLO 1999 Meeting, Santa Fe.
- Farkas, K., **B.R. Hargreaves, B.R.**, 1998. Hydrology of two pocono lakes: hourly weather and water level data yield rates of evaporation, runoff, & groundwater exchange. ASLO 1998 Aquatic Sciences Meeting, St. Louis. (abstract).
- **Hargreaves, B.R.** and C.A. Lozupone. 1997. Solar UV bleaching of DOM in lake water: experimental measurements and a model. ASLO 1997 Meeting Abstracts.
- 1996 Moeller, R. E. and **B. R. Hargreaves**. Midsummer resistance of phytoplankton productivity to UV photoinhibition in a clear temperate lake. EOS v.75, abstract for 1996 Ocean Sciences meeting of AGU/ASLO.

## G. TEACHING & RESEARCH ADVISING

### Courses Taught, (\* indicates courses currently taught)

- \*Arts 1, Choices & Decisions, first year advising course (2006, 2000).
- \*EES 109, (EES 89), Geographic Analysis of Our Changing World (4), new course under development for first offering Spring 2003. Lecture and recitation (course developed in 2001, offered 2003-2006; 2005 co-taught with J. Ramage)
- \*EES 31, Environmental and Organismal Biology (4), Spring Semester (enrollment 50-120) Lecture and laboratory.
- \*EES 93, 293, Supervised Internship (1-4 credits), typically 0-3 per semester.
- \*EES 359, EES 3800, Case Studies in Ecosystem Ecology (4), Fall semester (enrollment ca. 10)
- \*EES 361/BIOS 362, Animal Physiology (4), Spring Semester of odd years (enrollment 35-45). Lecture and recitation.
- \*EES 393, Undergraduate Research (2-4), (enrollment 0-2 per semester).
- \*EES 484, Aquatic Ecosystems (3). Graduate core course co-taught with 2-3 others in Fall Semester of even years (enrollment ca. 10; co-taught with others; I am the course leader).
- \*EES 487, Advanced topics in Bio-optics (3), Fall Semester, odd years (enrollment 3-7).
- EES 383, Environmental Instruments and Data (4), Fall Semester (enrollment 3-12). Lecture and laboratory.
- EES 384, Lake Ecosystem Field Course (4), Summer (enrollment 7-12; co-taught with others; I was the course leader and organizer).

## **Research advising (as primary advisor)**

### **Undergraduate (only the past 9 years listed)**

- Christopher Forstall (honors thesis 2004)
- Lisa Nichols (2004)
- Catherine Lozupone (Villanova Univ. honors thesis 1997)
- Elizabeth Blanchet (honors thesis 1999)
- Brian Malnati (summer 1998)
- Christopher Koehl (1998)
- Tom Daniel (summer 1998)
- Kahlil Jones (summer 1997)

### **Graduate students (as primary advisor; service on committees of other students not listed):**

- Catherine Q. Thompson (M.S. 1979; Ph.D. 1984)
- Roy L. Smith (Ph.D. 1984)
- Michal L. Kubik (M.S. 1982, Ph.D. 1989)
- Yin Zhong (M.S. 1996)
- Lore M. Ayoub (M.S. 1997)
- Kathryn L. Farkas (M.S. 1998)
- Cynthia Sopka (M.S. 1999)
- Kelly Maloney (M.S. 2000)
- Christopher Forstall (M.S. 2006)
- Shannon Haight (M.S. in progress)
- Andrea Luebbe (M.S. in progress)
- Elizabeth Wolyniak (Ph.D. in progress)

## **H. SERVICE**

### **University**

- Biology Evolution Search Committee (2006-2007)
- LTS Strategic Planning Committee (2006)
- FCC (3 year term prior to 1998)
- FFPOC (1999-2001; chair 2000-2001)
- LEWIS planning committee (2000-2002)
- Software Advisory Council (most recently, 2005-2006)
- Data Advisory Council (2005-present)
- STAR Academy weekend presentations to middle school and high school students (annually since the beginning of the program)
- Taylor College (dinners from the inception to 2006)

## **College**

- CAS Representative to RCEAS (2002-2005, 2006-2007)
- CAS Representative to CBE (2005-2006)

## **Department**

- 2004 Spring Break Student Trip to South Florida (co-organizer and co-leader)
- Library liaison (2000-present)
- Computer liaison (2000-2005)
- Computing Committee chair (ca 1997-2000)
- Foster Hewett organizer (Spring 2006)

## **Professional**

- Sigma Xi (from 2000-2005 as chapter secretary, president elect, president, past president)
- Phi Beta Delta (international scholarship honor society, from 2003-2007 as chapter president-elect, president, and past-president).
- National Canal Museum (board of directors)
- Lacawac Sanctuary (board of directors; science & management committee)

## **Membership in other Professional Organizations**

- American Geophysical Union
- American Society for Photobiology
- American Society of Limnology and Oceanography
- American Society for Advancement of Science
- Geological Society of America

## **More professional service: Peer review of proposals and journals**

- *Experimental Marine Biology and Ecology*
- *Comprehensive Series in Photochemical and Photobiological Sciences*, Royal Society of Chemistry, Cambridge
- *Arctic*
- *Limnology & Oceanography*
- *Marine Ecology Progress Series*
- *Chemosphere*
- *Estuarine Coastal & Shelf Science*
- *Journal of Photochemistry and Photobiology*
- *Water Air and Soil Pollution*
- Proposals reviewed: NOAA (Coastal Ocean Program)
- Proposals reviewed: NSF (Biological Oceanography)