**Stephen E. MacAvoy**

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**EDUCATION:**

2000 Ph.D. Environmental Sciences, concentration in Biogeochemistry
University of Virginia, Charlottesville, VA
Advisor: Dr. Stephen Macko
Dissertation: The exploitation of variable nutrient pools by aquatic predators in tidal freshwater and chemosynthetic communities: a multiple stable isotope and compound specific approach

1996 M.S. Environmental Sciences, concentration in Ecology
University of Virginia, Charlottesville, VA
Advisor: Dr. Arthur Bulger
Thesis: Susceptibility of the early life stages of brook trout (*Salvelinus fontinalis*) and adult blacknose dace (*Rhinichthys atratulus*) to acidification in Shenandoah National Park

1992 B.S. Biology
Fairfield University, Fairfield, CT
Advisor: Dr. Diane Brousseau
Senior project: Comparison of bivalve hemocytes using the feuglen picromethyl blue staining method

**EMPLOYMENT HISTORY (ACADEMIC):**

current-2015 ***Associate Professor (current)- Department Chair (2016-2022):*** Department Environmental Science,
American University
Developed and directed course structure and lecture material
Directed and co-directed M.S. students and undergraduate research projects
Supervised undergraduate teaching and research assistants

current-2003 ***Director: Graduate Environmental Studies Program.*** Department of Environmental Science, American University
Program administration, from recruiting to comprehensive exams
Designed curriculum structure and program goals for MS degree
Launched MS thesis program with non-thesis track
Academic advisor for all graduate MS students

2013-2010 ***Adjunct Doctoral Graduate Faculty:*** Department of Biology
State University of Texas, San Marcos
PhD candidate committee member

2014- ***Assistant Professor:*** Department of Environmental Science,

2003 American University
Developed 20 distinct courses ranging from Oceanography to graduate level Biogeochemistry and Climatology
Directed and co-directed M.S. students and undergraduate research projects
Administered laboratory courses (100 level) and supervised TAs.

2003-2001 ***Assistant Professor, full-time temporary:*** Department of Biology, American University
Developed and directed course structure and lecture material
Co-directed M.S. students and undergraduate research projects
Supervised Undergraduate Teaching and Research Assistants

2001-2000 ***Postdoctoral Associate:*** Department of Marine Sciences, University of Georgia
Coastal biogeochemistry
*PI:* Dr. Samantha Joye
Organized multiple PI long-term geochemistry projects
Integrated research results to address project goals
Directed field and laboratory research efforts with graduate students and technicians

1999-1997 ***Teaching Assistant:*** Organismal Biology BIO 204, University of Virginia

1997 ***Instructor:*** Department of Biology, University of Virginia
Taught Organismal Biology, BIO 204 (summer course)
Developed lesson plans and supervised Teaching Assistant

1995 ***Teaching Assistant****:* Plants and Insects EVSC 425, University of Virginia

***Technical skills***: stable isotope mass spectrometry (including GC/C/IRMS), gas chromatography/mass spectrometry (GC/MS), ion chromatography, organic geochemical extraction methods, total/dissolved organic carbon analysis, various color chromatography methods for dissolved nutrients and reduction/oxidation species

**EMPLOYMENT HISTORY (CONSULTING/PROGRAM REVIEWS)**

2018 **University of Tennessee Chattanooga**, Department of Biological, Geological and Environmental Science (BGE) program review.
-Site interview assessment of program status, objectives and strategic plans
-Developed suggestions for curricular and research program changes

2015 **USAID, Higher Education for Development (HED)**: Evaluation of "Building Capacity to Manage Water Resources and Climate Risk in the Caribbean" by Columbia University and University of the West Indies/Centre for Resource Management and Environmental Studies (UWI/CERMES).
-Site interview assessment of program implementation experience and outcomes.
-Participant and Stakeholder assessment

1996 ***Environmental Science Contracts****:* The Environmental Company Inc. Charlottesville, VA.
-Contracted for land use surveys to predict costs of USAF training missions.
-Deployments to: Alabama, Idaho, Kansas, Oklahoma, Mississippi, Nevada, North Carolina, South Carolina and Utah for independent GPS land use survey work

1995-1996 ***Environmental Consulting:*** Simpson Weather Associates, Charlottesville, VA. Evaluated coal dust emissions from trains in route from West Virginia mines to Norfolk, VA shipping yards. Surface-coal mine training. Data logger installation and monitoring. Constructed and deployed coal dust collection assemblages on rail coal cars.

## PUBLICATIONS

### REFEREED ARTICLES

36. Jessup, WH, Wiegand J, Delbridge-Perry M, **MacAvoy** SE, Connaughton VP. 2022. Development effects of siloxane exposure in zebrafish: a comparison study using laboratory-mixed and environmental water samples. *Journal of Applied Toxicology* 1-19 DOI: 10.1002/jat.4369

35. **MacAvoy** SE and Lunine A. (2022). Anthropogenic influences on an urban river: differences in cations and nutrients along an urban/suburban transect. *Water* 14(9): 1330, https://doi.org/10.3390/w14091330

34. Wilken RL, A Imanalieva, SE **MacAvoy**, VP Connaughton. (2020). Anatomical and behavioral assessment of larval zebrafish (*Danio rerio*) reared in Anacostia River water samples. *Archives of Environmental Contamination and Toxicology.* https://doi.org/10.1007/s00244-020-00707-0

33. Min Jung Kwon, D Baker, C Tudge, K Kim, SE **MacAvoy**. (2018). Museum collections yield information on nitrogen sources for coastal Gulf of Mexico, North Carolina and Caribbean invertebrates 1850 to 2004. *Journal of Shellfish Research* 37(5):1-7.

32. Mucha S, G Williamson and SE **MacAvoy**. (2018). Pollution reduction in throughflow from vegetated and non-vegetated, foam-based surfaces and green roofs. *Nitrogen 1: 21-33*.

31. **MacAvoy** SE, N Cortese, J Cybulski, A Hohn, SA Macko. (2017). Sources of stable isotope variation among stranded Western Atlantic dolphins (*Tursiops truncatus*) in North Carolina. *Marine Mammal Science* 33(4):1224-1234. DOI: 10.1111/mms.12425.

30. **MacAvoy** SE, A. Braciszewski, E. Tengi and D. Fong. (2016). Trophic plasticity among spring versus cave populations of *Gammarus minus:* examining functional niches using stable isotopes and C/N ratios. *Ecological Research* 31(4): 589-595. DOI 10.1007/s11284-016-1359-6

29. **MacAvoy** SE, Katie Plank, Sydney Mucha and Glenn Williamson. (2016). Effectiveness of foam-based green surfaces in reducing nitrogen and suspended solids in an urban installation. *Ecological Engineering* 91: 257-264.

28. **MacAvoy** SE, V. Bacalan, M. Kazantseva, J. Rhodes, K. Kim. (2015). Sulfur isotopes show importance of freshwater primary production for Florida, USA manatees. *Marine Mammal Science* 31(2): 720-725.

27. Kraeer K, L Arneson, SE **MacAvoy**. (2014). The intraspecies relationship between tissue turnover and metabolic rate in rats. *Ecological Research* 29(5): 937-947.

26. Connor NC, Sarraino S, Frantz D, Bushaw-Newton K, **MacAvoy** SE. (2014). Geochemical characteristics of an urban river: influences of an anthropogenic landscape. *Applied Geochemistry* 47:209-216.

25. **MacAvoy** SE, S Lazarov, K Kraeer and L Arneson. (2012). Sex and strain differences in isotope turnover rates and metabolism in mice (*Mus musculus*). *Canadian Journal of Zoology* 90(8): 984-990.

24. Bushaw-Newton KL, Ewers E, Fortunato CS, Ashley JT, Velinsky DJ, SE **MacAvoy**. (2012). Bacterial community profiles from sediments of the Anacostia River using metabolic and molecular analyses. *Environmental Science and Pollution Research* 19 (4): 1271-1279.

23. Hanson N, M. Fogel, D Fong, SE **MacAvoy**. (2010). Marine nutrient transport: anadromous fish migration linked to the freshwater amphipod (*Gammarus fasciatus*). *Canadian Journal of Zoology* 88:546-552.

22. **MacAvoy** SE, Ewers E, Bushaw-Newton K. (2009). Nutrients, oxygen dynamics, stable isotopes and fatty acid concentrations of a freshwater tidal system, Washington, D.C. *Journal of Environmental Monitoring* 11:1622-1629.

21. **MacAvoy** SE, Garman GC, Macko SA. (2009). Anadromous fish as marine nutrient vectors. *Fish. Bull.* 107:165-174.

20. **MacAvoy** SE, Carney RS, Morgan E, Macko SA. (2008). Stable isotope variation among the mussel *Bathymodiolus childressi* and associated heterotrophic fauna at four cold-seep communities in the Gulf of Mexico. *Journal of Shellfish Research 27(1),* 147-151.

19. **MacAvoy** SE, Morgan E, Carney RS, Macko SA. (2008). Chemoautolithotrophic production as a fuel for heterotrophs in hydrocarbon seeps: an examination of mobile benthic fauna and seep residents. *Journal of Shellfish Research 27(1),* 153-161.

18. Baker DM, **MacAvoy** SE, Kim K. (2007). Relationship between water quality, $\delta^{15}$N, and aspergillosis of Caribbean sea fan corals. *Marine Ecology Progress Series, 343,* 123-130.

17. Tarboush, R. A., **MacAvoy**, S. E., Macko, S. A., Connaughton V. (2006). Contribution of catabolic tissue replacement to the turnover of stable isotopes in *Danio rerio*. *Canadian Journal of Zoology, 84,* 1453-1460.

16. **MacAvoy**, S. E., Arneson, L. S., & Bassett, E. (2006). Correlation of metabolism with tissue carbon and nitrogen turnover rate in small mammals. *Oecologia, 150,* 190-201.

15. Arneson, L. S., **MacAvoy**, S., & Basset, E. (2006). Metabolic protein replacement drives tissue turnover in adult mice. *Canadian Journal of Zoology, 84,* 983-993.

14. Weston, N. B., Porubsky, W. P., Samarkin, V. A., Erickson, M., **MacAvoy**, S. E., & Joye, S. B. (2006). Porewater stoichiometry of terminal metabolic products, sulfate, and dissolved organic carbon and nitrogen in estuarine intertidal creek-bank sediments. *Biogeochemistry, 77,* 375-408.

13. Arneson, L. S. & **MacAvoy**, S. E. (2005). Carbon, nitrogen, and sulfur diet-tissue discrimination in mouse tissues. *Canadian Journal of Zoology, 83,* 989-995.

12. **MacAvoy**, S. E., Macko, S. A., & Arneson, L. S. (2005). Growth versus metabolic tissue replacement in mouse tissues determined by stable carbon and nitrogen isotope analysis. *Canadian Journal of Zoology, 83,* 631-641.

11. **MacAvoy**, S. E., Fisher, C. R., Carney, R. S., & Macko, S. A. (2005). Nutritional associations among fauna at hydrocarbon seep communities in the Gulf of Mexico. *Marine Ecology Progress Series, 292,* 51-60.

10. **MacAvoy**, S. E. & Bulger, A. J. (2004). Sensitivity of blacknose dace (*Rhinichthys atratulus*) to moderate acidification events in Shenandoah National Park, USA. *Water Air and Soil Pollution, 153,* 125-134.

9. **MacAvoy**, S. E., Macko, S. A., & Carney, R. S. (2003). Links between chemosynthetic production and mobile predators on the Louisiana continental slope: stable carbon isotopes of specific fatty acids. *Chemical Geology, 201,* 229-237. ***Selected paper*** for inclusion in Elsevier's Journal of Geobiology 2003.

8. **MacAvoy**, S. E., Macko, S. A., & Joye, S. B. (2002). Fatty acid carbon isotope signatures in chemosynthetic mussels and tube worms from Gulf of Mexico hydrocarbon seep communities. *Chemical Geology, 185,* 1-8.

7. **MacAvoy**, S. E., Carney, R. S., Fisher, C. R., & Macko, S. A. (2002). Use of chemosynthetic biomass by large, mobile, benthic predators in the Gulf of Mexico. *Marine Ecology Progress Series, 225,* 65-78.

6. **MacAvoy**, S. E., Macko, S. A., & Garman, G. C. (2001). Isotopic turnover in aquatic predators: Quantifying the exploitation of migratory prey. *Canadian Journal of Fisheries and Aquatic Sciences, 58,* 923.

5. **MacAvoy**, S. E., Macko, S. A., McIninch, S. P., & Garman, G. C. (2000). Marine nutrient contributions to freshwater apex predators. *Oecologia, 122,* 568-573.

4. **MacAvoy**, S. E., Macko, S. A., & Garman, G. C. (1998). Tracing marine biomass into tidal freshwater ecosystems using stable sulfur isotopes. *Naturwissenschaften, 85,* 544-546.

3. **MacAvoy**, S. E. & Zaepfel, R. C. (1997). Effects of tricaine methanesulfonate (MS-222) on hematocrit: First field measurements on blacknose dace. *Transactions of the American Fisheries Society, 126,* 500-503.

2. **MacAvoy**, S. E. & Bulger, A. J. (1995). Survival of brook trout (*Salvelinus fontinalis*) embryos and fry in streams of different acid sensitivity in Shenandoah National Park, USA. *Water Air and Soil Pollution, 85,* 445-450.

1. Dennis, T. E., **MacAvoy**, S. E., Steg, M. B., & Bulger, A. J. (1995). The association of water chemistry variables and fish condition in streams of Shenandoah National Park (USA). *Water Air and Soil Pollution, 85,* 365-370.

**BOOKS:**

Eisenstadt, Todd and **MacAvoy**, Stephen. 2021. *Climate Change, Science, and the Politics of Shared Sacrifice.* Oxford University Press. 400 pages. *ISBN* 9780190063696.

## RESEARCH

**SPONSORED RESEARCH: EXTERNAL GRANTS RECEIVED: Approximately $256,000 in external funding since 2006.**

*USGS Water Resources Research Institute (WRRI).* 2021. Exploring anomalously high calcium in suburban MD streams in the absence of bedrock carbonate and geochemical indicators of concrete dissolution.

- Award amount; 15,000

*USGS Water Resources Research Institute (WRRI).* 2020. Next-generation effects-based monitoring of contaminants in the Anacostia and Potomac Rivers. Co-PI.

- Award amount; 10,000

*USGS Water Resources Research Institute (WRRI).* 2020. Toxicity of organic contaminants in urban and suburban areas of the Anacostia and Potomac Rivers.

- Award amount; 10,000

*USGS Water Resources Research Institute (WRRI).* 2019. Concentrations of siloxanes, polycyclic aromatic hydrocarbons and cations in urban and suburban areas of the Anacostia

- Award amount; 10,000

*NIH (collaborator not PI (PI is V. Connaughton)). 2019.* Developmental manipulation of estrogen signaling alters adult visual function.

- Responsible for identifying Bisphenol A, Estradiol and Tributyltin in fish tissues

*USGS Water Resources Research Institute (WRRI).* 2018. Inorganic geochemistry and endocrine disrupters in urban streams: quantifying links between development patterns and water chemistry.

- Award amount; 10,000

*NASA DC Space Grant Consortium*. 2017. Development of a biomonitoring system to assess water quality using an interdisciplinary approach. (co-PI with Prof. Connaughton).

- Award amount; $5,250

*USGS Water Resources Research Institute (WRRI).* 2017. Examination of nutrient and land use patterns in the tidal Anacostia River

- Award amount; $10,000

*Cave Conservancy of Virginia:* 2016-2018. "Assessing the trophic ecology and climate change resilience of *Stygobromus tenuis potomacus*"

- Award amount; $14,445

*USGS Water Resources Research Institute (WRRI).* 2015/16. Evaluation of “green roof” effectiveness for nitrogen, phosphorus and suspended solid reduction in runoff from precipitation events.

- Award amount; $10,000

*USGS Water Resources Research Institute (WRRI).* 2014/15. "Geochemical characteristics of an urban river: detecting the influences of an urban landscape"

- Award amount; $15,000

*National Fish and Wildlife Foundation*, through Washington DC Fire and Emergency Management Service. 2012-2015. "Nutrient, TSS and Organic Carbon Reduction Associated with Aqualok".

- Award amount; $64,526 total. Year 1 (2012/13) $25,902; Year 2 (2013/14) $16,313; Year 3 (2014/15) $22,311

*USGS Water Resources Research Institute*. 2012/13 "Episodic changes in water chemical composition and nutrient loading in the Anacostia River".

- Award amount; $15,000

*USGS Water Resources Research Institute.* 2011/12. "Hormone disruption and environmental pollutants in Anacostia and Potomac River fish, Washington DC".

- Award amount; $15,000

*USGS Water Resources Research Institute* 2010/11. "Determination of Seasonal Source Variation of Hydrocarbons, Fatty Acids, Organics and Nutrients in the Anacostia River: stable isotope ratios of individual compounds"

- Award amount; $15,000

*USGS Water Resources Research Institute* 2008/09. "Assessing the distribution of synthetic organics and the degradation of polycyclic aromatic hydrocarbons in the Anacostia river through microbial and stable isotope studies" (co-PI with Prof. Bushaw-Newton)

- Award amount; $15,000

*Cave Conservancy of Virginia:* 2007/08. "Metabolic Differences between Surface and Cave Amphipods: The Evolution of Life Style Differences".

- Award amount; $10,000

*USGS Water Resources Research Institute* 2006/07. "Nutrient flow and biological dynamics in the Anacostia River (CO-PI with Karen Bushaw Newton)".

- Award amount; $15,000 total

*University of Virginia Moore Research Grant*: 1998. "The contribution of anadromous fish to the diets of introduced piscivores in the tidal freshwater regions of Virginia."

- Award amount; $2,500

**SPONSORED RESEARCH: <u>INTERNAL GRANTS RECEIVED</u>**

*American University Mellon Grant:* 2016. Effects of urbanization on nutrients in rivers

- Award amount; $4,000

*American University Mellon Grant:* 2013. Evaluation of “green roof” effectiveness for nitrogen, organic carbon and suspended solid reduction in runoff from precipitation events: The American University test case

- Award amount; $2,500

*American University Faculty Research Support Grant:* 2011. Relationships between geographic distribution, trophic structure and toxins in Southwest Fl manatees

- Award amount; $9,851

*American University Mellon Grant:* 2007. Correlations between metabolic rate and protein/carbohydrate uptake in tissues

- Award amount; $2,053

*American University Mellon Grant:* 2006. Marine nutrient contributions to two tidal creeks in Virginia: spawning marine fish as nutrient vectors to freshwater ecosystems

- Award amount; $2,000

*American University, Dean's Undergraduate Research Award*. 2004. $2000 for Eric Morgan (undergraduate Environmental Science major).

- $500 for SE MacAvoy and $500 for supplies. $3000 total

*American University Awards for Faculty Creative Activity and Research:* 2003. Marine primary production fueling freshwater ecosystems: Declining river herring as marine nutrient vectors for eastern coastal freshwater rivers

- Award amount; $2,000

*American University Mellon Grant:* 2003. The importance of Gulf of Mexico hydrocarbon seepage as an energy source for mobile benthic fauna

- Award amount; $2,000

*American University Mellon Grant:* 2003. Analysis of growth and tissue replacement rates by stable sulfur isotope turnover. Co-principal investigator with Dr. Lynn Arneson, American University

- Award amount; $2,000

*American University Mellon Grant:* 2002. Metabolic turnover rate and nutrient allocation as assessed by multiple stable isotope analysis. Co-principal investigator with Dr. Lynn Arneson, American University

- Award amount; $1,800

*American University Senate Grant*: 2002. Links between anthropogenic nutrient loading and gorgonid aspergillosis disease in the Florida Keys. Co-principal investigator with Dr. Kiho Kim, American University

- Award amount; $10,000

*American University Mellon Grant:* 2002. Quantification of nutrient allocation in mice: metabolic rates of turnover in different tissues. Co-principal investigator with Dr. Lynn Arneson, American University

- Award amount; $2,000

## HONORS AND AWARDS

*Award for Excellence in Master's Student Mentoring.* American University, Vice-Provost Office, Spring 2016

*Ann S. Ferren Curriculum Design Award.* American University, Center for Teaching, Research and Learning. Co-awardee. Spring 2014.

*Outstanding Teaching Award*: Biology Department, American University (ENVS 581 Environmental Science II), Fall 2008 (for Spring 2008 term)

*Outstanding Teaching Award*: Biology Department, American University (BIO 240 Oceanography), Fall 2008 (for Spring 2008 term)

*Outstanding Teaching Award:* Biology Department, American University (BIO 396/696; Environmental Geology), Spring 2008 (for Fall 2007 term)

*Outstanding Teaching Award:* Biology Department, American University (BIO 499; Senior Seminar, Fall 2005 (for Spring 2005 term)

*Outstanding Teaching Award:* Biology Department, American University (CHEM 220; Environmental Resources and Energy), spring 2003 (for Fall 2002 term)

*Outstanding Teaching Award:* Biology Department, American University (BIO 396; Marine Mammals), Fall 2002 (for Spring 2002 term)

*Trout Unlimited Award*: For outstanding contributions to cold water fisheries research. May 2000
Award amount $1,000

*DuPont Fellowship*: University of Virginia Graduate School of Arts and Sciences. May 1999.
Award amount $3,000

*Odum Fellowship*: University of Virginia Graduate School of Arts and Sciences. May 1999.
Award amount $3,000

**SPONSORED RESEARCH: GRANTS DENIED (external only)**

*USGS National Institute of Water Research (NIWR). 2016.* Evaluation of the effectiveness of green roofs and other LIDs in reducing nitrogen, phosphorus and suspended solids in runoff from precipitation events

- Award sought; $91,780 total (with cost share). $46,000 (AU only)

*NASA DC Space Grant Consortium. 2016.* Development of a biomonitoring system to assess water quality. Co-principal investigator with Dr. Connaughton

- Award sought; $18,000

*USGS Water Resources Research Institute (WRRI).* 2016. Examination of nutrient and land use patterns in the tidal Anacostia River

- Award sought; $10,000

*Army Corps of Engineers/NIWR*. 2015. Evaluation of the effectiveness of green roofs and other LIDs in reducing nitrogen, phosphorus and suspended solids in runoff from precipitation events.

- Award sought; approximately $149,437 total. $72,000 (AU only)

*Global Innovation Initiative (USAID and State Department)*. Fall 2014. International strategies for urban environmental planning: integration of STEM and policy. In partnership with Center for Latin American and Latino Studies and School of Public Affairs

- Award sought; approximately $200,000

*USGS Water Resources Research Institute (WRRI).* 2013/2014. Evaluation of "green roof" effectiveness for nitrogen, phosphorus and suspended solid reduction in runoff from precipitation events: The American University test case

- Award sought; $15,000

*NSF* Governing for Sustainability in Coastal Communities: Conceptual Foundations and Field Testing in the Mid-Atlantic and Great Lakes

- Award sought; $440,000 (approx)

*EPA STAR Grant*. 2012-2015. Sustainable Chesapeake: A Community-Based Approach to Stormwater Management using Green Infrastructure.

- Award sought; $688,601

*National Science Foundation*. Submitted July 2010. Nutrient quality and incorporation rate: Effects of metabolic rate and nutrient source on tissue carbon, nitrogen and sulfur stable isotope turnover rate in small mammals.

Award sought; $431,000 (approx)

*Maryland Sea Grant (NOAA).* Submitted 2010. Impact of combined sewage outflows on the biogeochemistry of an urban stream: hydrocarbon, fatty acid and nutrient distribution in the Anacostia River

• Award sought; $31,083

*National Science Foundation* NSF GPG 1-2008. 12/2008. Ecology of avian diseases: the influence of migration on diversity, population dynamics, and geospatial genetic structure of host-pathogen-vector interactions.

• Award sought $94,815

*Cave Conservancy of Virginia:* 2/07. Metabolic differences between surface and cave amphipods: The evolution of life style differences.

• Award sought; $10,000

*National Science Foundation:* 2/05. The importance of chemosynthetic production to benthic crustaceans and gastropods in Gulf of Mexico hydrocarbon seepage areas

• Award sought; $118,000 per year for 3 years

*National Science Foundation:* 7/04. Effects of Metabolic Rate and Nutrient Source on Tissue Carbon, Nitrogen and Sulfur Stable Isotope Turnover Rate in Small Mammals. Co-principal investigator with Dr. Lynn Arneson, American University

• Award sought; $249,000 over two years

*National Science Foundation:* 7/03. Effects of metabolic rate and diet quality upon tissue carbon, sulfur and nitrogen stable isotope turnover rate in small mammals. Co-principle investigator with Dr. Lynne Arneson, American University

- Award sought; $277,000 (over two years)

*National Science Foundation:* 7/03. Investigations of the role of small dams on the organic matter biogeochemistry of small stream systems. Co-principle investigator with Dr. Bushaw-Newton, American University

- Award sought; $265,000 (over two years)

*EarthWatch Institute*: pre-proposal submitted November 2002. Marine primary production fueling freshwater ecosystems: River herring as nutrient vectors for Eastern coastal freshwater river ecosystems in Virginia. Co-principal investigator with Drs. Stephen Macko, University of Virginia and Greg Garman, Virginia Commonwealth University

• Award sought; $27,000 renewed yearly

*National Institute of Health:* submitted October, 2002. Metabolic turnover rate and nutrient allocation as assessed by multiple stable isotope analysis. Co-principal investigator with Dr. Lynne Arneson, American University

- Award sought; $783,000 (over 5 years)

**LECTURES: PAPERS PRESENTED AT PROFESSIONAL MEETINGS (ORAL). *indicates presenter**

4/12/2019 National Capitol Region Water Resources Symposium. Washington DC
Effectiveness of foam based green roofs/surfaces for reducing pollutant concentrations relative to conventional roofs.
Sydney Mucha, Glenn Williamson, and Stephen E **MacAvoy***.

12/15/2017 American Geophysical Union Annual Meeting, New Orleans, LA
**ED51A-07**: Effectively using urban landscapes to teach biodiversity and ecohydrology for introductory environmental science classes.
C Pondell*, A van Doorn, SE **MacAvoy**

12/11/2017 American Geophysical Union Annual Meeting, New Orleans, LA
GC14C: Urbanization and Water Quality I. **SESSION Co-Chair and Co-Convener**

12/16/2015 American Geophysical Union Annual Meeting, San Francisco, CA.
**ED33E:** Experience-Based Learning: Enhancing Earth Science Education by Expanding the Classroom I and II. **SESSION Co-Chair and Co-Convener**. ED33E-04 "Urban Field Experiences for Undergraduate Liberal Arts Students: Using Compromised Environments as Living Laboratories"
**Stephen E MacAvoy*** and Karen Knee

12/15/2014 American Geophysical Union Annual Meeting, San Francisco, CA
" Experience-Based Learning: Enhancing Understanding by Expanding the Limits of the Classroom I"
**S.E. MacAvoy** and A. Schwarzschild. **SESSION CHAIRS**

11/14/2014 Cities Alive: 12th Annual Green Roof and Wall Conference. Comparing Economic and Ecological Benefits of Green Roof Systems.
G. Williamson and SE **MacAvoy***.

11/3-6/14 American Water Resources Association. Tysons Corner, VA. "Profiles in Urban Streams: Bacterial communities of the Anacostia River System".
Karen L. Bushaw-Newton*, Kenneth Jensen, Jeffrey Kaplan, and Stephen **MacAvoy**

12/14/07 American Geophysical Union Annual Meeting, San Francisco, CA
"Biogeochemical snapshot of an urban water system: The Anacostia River, Washington DC"
S.E. **MacAvoy***, E. Ewers, and KL Bushaw-Newton. **SESSION CHAIRS**

8/28/03 10th Deep-sea Biology Symposium, Coos Bay, OR
"Isotopically traced scenarios of background/foreground trophic interaction at Gulf of Mexico hydrocarbon seeps: Exporting or Importing?"
Carney* R.S., S.E. **MacAvoy**, S.A. Macko, C.R. Fisher

3/27/03 Marine Benthological Society Annual Meeting, Mystic, CT

"Anadromous fish as marine nutrient vectors to the tidal freshwater fish communities of Virginia: bulk and compound specific isotope analysis"
S.E.**MacAvoy***, S.P. McIninch, G.C. Garman, S.A. Macko

8/20/02 American Fisheries Society Annual Meeting, Baltimore, MD
"Anadromous fish are marine nutrient vectors to the tidal freshwater fish communities of Virginia: Evidence from bulk and compound specific isotope analysis"
S.E.**MacAvoy***, S.P. McIninch, G.C. Garman, S.A. Macko

11/5/01 Estuarine Research Federation, Fall Meeting, St. Pete Beach FL
"Groundwater inputs and sediment biogeochemical processes in Georgia and South Carolina coastal ecosystems" S.B. Joye, S.E. **MacAvoy**, W. Porubsky, N. Weston*

5/29/01 American Geophysical Union, Spring Meeting, Boston, MA
"Groundwater-derived nutrients and microbial community processes in pristine and developed coastal areas in the southeast USA" S.E. **MacAvoy**, N. Weston, W. Porubsky, S.B. Joye*

1/27/00 American Society of Limnology and Oceanography/American Geophysical Union, Annual Meeting, San Antonio, TX
"Stable isotope analysis of chemosynthetic and heterotrophic animals associated with hydrocarbon seeps in the Gulf of Mexico" S.A. Macko, S.E. **MacAvoy***, R.S Carney, C.R. Fisher

5/16/97 Chesapeake Regional Association of Biogeochemists, Gloucester Point, VA
"Determination of freshwater vs. marine contributions to exotic aquatic predators in tidal river ecosystems of Virginia" S.E. **MacAvoy***, S. A. Macko and G.C. Garman

2/4/99 American Society of Limnology and Oceanography, Annual Meeting, Santa Fe, NM
"Quantifying the contribution of anadromous clupeid fish to the diet of an introduced, apex predator (blue catfish, *Ictalurus furcatus*) in tidal freshwater using stable isotopes" S.E. **MacAvoy***, S. A. Macko, S.P. McIninch, G.C. Garman

6/2/95 East Coast Trout Culture and Management Workshop II, American Fisheries Society, State College, PA
"Acidification effects on survival of brook trout (*Salvelinus fontinalis*) embryos and fry in Shenandoah National Park" S.E. **MacAvoy*** and A.J. Bulger

4/22/94 American Fisheries Society Meeting of the Virginia and Potomac Chapters, Lurray, VA
"Coincidence of low pH, high aluminum stream flow and high mortality of brook trout sac fry in Shenandoah National Park" S.E. **MacAvoy*** and A.J. Bulger

## LECTURES: PAPERS PRESENTED AT PROFESSIONAL MEETINGS (POSTERS)

*indicates presenter

12/15/2021. American Geophysical Union Annual Meeting (online). Anthropogenic influences on an urban river: differences in cations and metals along an urban/suburban transect. Stephen E. MacAvoy

12/10/20. American Geophysical Union Annual Meeting (online). Session Co-Chair and Co-Convener. Coastal Water Pollution

12/10/20. American Geophysical Union Annual Meeting (online). **Session Co-Chair and Co-Convener.** ED001 Enhancing Earth Science educational experiences beyond the classroom walls I and II (oral and poster sessions)

12/10/20. American Geophysical Union Annual Meeting (online). ED001 "Making best use of face to face time for environmental science classes during COVID19 restrictions" Stephen MacAvoy and Barbara Balestra,

12/10/20. American Geophysical Union Annual Meeting PAHs and siloxanes in urban and suburban areas of the Anacostia River, Washington DC. Ashley Acevedo and Stephen E. MacAvoy

12/10/19. American Geophysical Union Annual Meeting, Washington DC. **Session Co-Chair and Co-Convener. ED22A and** ED23F Beyond the Walls: Stimulating the Earth Science Educational Experience I and II (oral and poster sessions)

12/10/19. American Geophysical Union Annual Meeting, Washington DC. ED23F-1075 Effectively using urban landscapes to teach biodiversity and echohydrology for introductory environmental science classes.
CR Pondell, A van Doorn, SE **MacAvoy**.

12/10/19. American Geophysical Union Annual Meeting, Washington DC. ED22A-04 Field investigations applied to an emerging environmental issue: Microplastics and synthetic fibers in an urban freshwater system.
J Meiller and SE **MacAvoy**.

12/10/19. American Geophysical Union Annual Meeting, Washington DC. GC21I-1379 PAHs and siloxanes in urban and suburban areas of the Anacostia River, Washington DC.
SE **MacAvoy**, A Acevedo, W Jessup, T Barnhill, V Connaughton

12/13/18. American Geophysical Union Annual Meeting, Washington DC. Session B43L-2992: Controls on base cations and nutrients in urban and suburban locations in the Anacostia River, Washington DC.
SE **MacAvoy**

12/12/17 American Geophysical Union Annual Meeting, New Orleans, LA. **Session Co-Chair and Co-Convener**. GC21H: Urbanization and Water Quality II Posters
GC21H-1030: Effectiveness of foam-based and traditional green roofs in reducing nitrogen, phosphorus, organic carbon and suspended solids in urban installations
SE **MacAvoy***, S Mucha, G Williamson

12/13/16 American Geophysical Union Annual Meeting, San Francisco, CA. **Session Co-Chair and Co-Convener**. Session ED23C-0834: "Effectively using urban landscapes to teach biodiversity and echohydrology for introductory environmental science classes" Angela van Doorn, Christina Pondell***** and **Stephen E. MacAvoy**

12/14/16 American Geophysical Union Annual Meeting, San Francisco, CA. **Session Co-Chair and Co-Convener**. B31C-0486: Influence of Land Use, Discharge and Impervious Surfaces on the Geochemistry of the Anacostia River DC, USA. **Stephen E. MacAvoy*** and Nicholas De Filippis

12/17/2015 American Geophysical Union Annual Meeting, San Francisco, CA. **Session Co-Chair and Co-Convener**. Session **B41B:** Biogeochemistry of Rivers and Soils in the Urban

Ecosystem and Their Climate Impacts Posters. "Geochemical Characteristics of an Urban River: Influences of an Urban Landscape" SE **MacAvoy*** and E Petersen.

12/16/2014 American Geophysical Union Annual Meeting, San Francisco, CA. ED21C-3453 **"**Utilizing Urban Environments for Effective Field Experiences". **Invited**. SE **MacAvoy*** and K Knee.

12/11/13 American Geophysical Union, Annual Meeting, San Francisco CA. H31H-1282 "Geochemical characteristics of an urban river: Geochemical contamination and urban stream syndrome" Nicholas P. Connor, Stephanie L. Sarraino, Deborah E. Frantz, Karen Bushaw-Newton, Stephen E. **MacAvoy***

12/7/12 American Geophysical Union, Annual Meeting. San Francisco CA. "Patterns of mortality among South Florida Manatees: Evidence from oxygen and sulfur and isotopes"
Stephen E. **MacAvoy***, Vince Bacalan, Mary Kazantseva,
Jon Rhodes, Kiho Kim

12/5/11 American Geophysical Union, Annual Meeting. San Francisco CA. " Biogeochemical characteristics of a polluted urban stream (Anacostia River, Washington DC, USA): inorganic minerals, nutrients and allochthonous vs. autochthonous production"
S.L. Sarraino, D.E. Frantz, K Bushaw-Newton and S.E. **MacAvoy***

12/16/10 American Geophysical Union, Annual Meeting. San Francisco CA. "Seasonal nutrient dynamics in the Anacostia River (D.C., USA): geochemistry and hydrocarbon biomarkers"
S.L. Sarraino, D.E. Frantz and S.E. **MacAvoy***

12/14/09 American Geophysical Union, Annual Meeting. San Francisco CA. "Ecosystem connectivity: anadromous fish migration linked to freshwater amphipods"
S.E. **MacAvoy***, ML Fogel, D Fong, N Hanson.

5/23-26/06 American Geophysical Union. Joint assembly with NABS and others. Baltimore MD. "Chemoautolithotrophic Primary Production as a Fuel for Heterotrophs in Hydrocarbon Seeps: an Examination of Mobile Benthic Fauna and Seep Residents"
S.E. **MacAvoy***, E. Morgan, C.R. Fisher, R.S. Carney, S.A. Macko

5/27/05 American Geophysical Union, Joint assembly with NABS and others, New Orleans, LA "Importance of Chemolithoautotrophic Production to Mobile Benthic Predators in the Gulf of Mexico"
E. Morgan*, S.E. **MacAvoy**, R.S. Carney

5/21/04 American Geophysical Union, International meeting, Montreal CANADA
Nutritional associations among fauna at hydrocarbon seep communities in the Gulf of Mexico
S.E. **MacAvoy***, C.R. Fisher, R.S. Carney, S.A. Macko

4//04 International conference on use of isotopes in ecological studies, Wellington, NZ
"Effects of metabolic rate and diet quality upon tissue sulfur stable isotope turnover rate in small mammals"
L. Arneson***,** S.E. **MacAvoy,** S.A. Macko

12/10/03 American Geophysical Union, Annual Meeting, San Francisco, CA
"Effects of metabolic rate and diet quality upon tissue carbon, sulfur and nitrogen stable isotope turnover rate in small mammals"
S.E. **MacAvoy***, T. Jamil, S.A. Macko and L. Arneson

"Effects of metabolic rate and diet quality upon tissue sulfur stable isotope turnover rate in small mammals"
L. Arneson**,** S.A. Macko and S.E. **MacAvoy***

3/27/03 Marine Benthological Society Annual Meeting, Mystic, CT
“Assessing pollution in gorgonians using stable isotope analysis”
D.M. Baker*, S.E. **MacAvoy**, S.A. Macko, K. Kim

5/29/02 American Geophysical Union, Spring Meeting, Washington, DC
"Turnover of stable isotopes due to growth and metabolism in Zebrafish, *Danio rerio*" R. Tarboush*, S.E. **MacAvoy**, S.A. Macko, V. Connaughton

10/01 2nd International Symposium on Hydrothermal Vent Biology, Brest, France. "Change in tissue stable isotope composition in transplanted hydrocarbon seep mussels. S. Dattagupta, E.B. Smith, S.A. Macko, S.E. **MacAvoy**, C.R. Fisher*

8/4/00 LTER all scientist meeting, Snowbird UT
“Insights into trophic dynamics and organic matter preservation through compound specific isotope analysis” S.A. Macko*, S.E. **MacAvoy**, M.J. Geyer

12/13/00 American Geophysical Union, Fall Meeting, San Francisco, CA
“Chemosynthetic production utilized by Gulf of Mexico heterotrophs: carbon isotope compositions of specific fatty acids” S.E. **MacAvoy***, S.A. Macko, S.B. Joye, C.R. Fisher, R.C. Carney

1/23-25/00 American Society of Limnology and Oceanography/American Geophysical Union, Annual Meeting, San Antonio, TX
“Quantifying the contribution of anadromous fish to the diet of an introduced predator (blue catfish) in tidal freshwater using stable isotopes.” S.E. **MacAvoy***, S.A. Macko, S.P. McIninch, G.C. Garman

8/29-9/2/99 American Fisheries Society, Annual Meeting, Charlotte, NC
“Stream chemistry and fish species richness in Shenandoah National Park (Virginia, U.S.A.)” A.J. Bulger*, M.B. Steg, T.E. Dennis, S.E. **MacAvoy**

6/26-30/95 Acid Reign '95? Goteborg, Sweden.
“Survival of brook trout (*Salvelinus fontinalis*) embryos and fry in streams of different acid sensitivity in Shenandoah National Park, USA.” S.E. **MacAvoy** and A.J. Bulger*

“Water chemistry variables as predictors of fish condition factor in Shenandoah National Park (U.S.A.)” T.E. Dennis, S.E. **MacAvoy**, M.B. Steg, and A. J. Bulger*

8/13-19/95 Gordon Conference, NH
“Bioassays with brook trout (*Salvelinus fontinalis*) embryos and fry in streams of different acid sensitivity in Shenandoah National Park, USA” S.E. **MacAvoy** and A.J. Bulger*

“Water chemistry variables as predictors of blacknose dace (*Rhinichthys atratulus*) condition factor in Shenandoah National Park (U.S.A.)” T.E. Dennis*, S.E. **MacAvoy**, M.B. Steg, and A.J. Bulger

**LECTURES: INVITED**

9/22/20 University of Virginia, Department of Environmental Science (undergraduate seminar)
"'Light at the End of the Tunnel: Challenge and Success in the Anacostia River (DC) Restoration"

9/24/19 University of Virginia, Department of Environmental Science (undergraduate seminar)
"'Altered States: Challenge and a Chance for Recovery for the Anacostia River, Washington DC"

9/25/18 University of Virginia, Department of Environmental Science (undergraduate seminar)
"Urban Stream Syndrome in the Anacostia River, Washington DC: Silver Buckshot Solutions"

5/2/18 University of Maryland, Department of Geology (graduate seminar)
"Concrete, contaminants and catfish: altered geochemistry of the Anacostia and the promise of urban green roofs"

11/10/16 University of Virginia, Department of Environmental Science (graduate class)
"Fish as nutrient vectors. Isotopes/fatty acids tracing marine nutrients and the importance of "turnover"

9/27/16 University of Virginia, Department of Environmental Science (undergraduate seminar)
"Concrete, Catfish and Contaminants: "Urban Stream Syndrome" in the Anacostia River, Washington DC"

4/20/16 University of Virginia, Department of Environmental Science (graduate class)
Nutrient tracing in coastal systems via isotopes and the importance of turnover assessment

2/24/16 American University, Seminars in Chemistry and Biochemistry
"Concrete, Catfish and Contaminants: "Urban Stream Syndrome" in the Anacostia River, Washington DC"

1/29/16 American University, ECOllaborative Colloquium, Panel Presentation
"Geochemical transformation of urban waters: signs of the Anthropocene"

9/22/15 University of Virginia, Department of Environmental Science (undergraduate seminar)
"From Blight to Bright: Challenge and hope for urban rivers in Washington DC"

9/23/14 University of Virginia, Department of Environmental Science (undergraduate seminar)
"Concrete, Catfish and Contaminants: "Urban Stream Syndrome" in the Anacostia River, Washington DC"

7/25/14 Green Roofs for Healthy Cities, Green Roof Boot Camp. Washington DC
"Measuring Ecological Benefits of Green Roof Systems"

1/28/14 George Mason University, Biology Department
"Life without light: chemosynthesis versus photosynthesis in the deep Gulf of Mexico"

3/22/10 George Mason University, Department of Environmental Science and Policy
"Hydrocarbon seep communities in the Gulf of Mexico: photosynthesis vs. chemosynthesis in the deep ocean".

5/8/09 Virginia Commonwealth University, Center for Environmental Studies, First Annual Rice Research Symposium
"Ecosystem connectivity: anadromous fish migration linked to freshwater amphipods"

9/5/06 University of Virginia, Department of Environmental Science (undergraduate seminar)
"Exploring the Deep-sea communities of the Gulf of Mexico"

4/21/06 Virginia Commonwealth University, Center for Environmental Studies
"Anadromous fish as nutrient vectors to tidal freshwater: seasonal pulse utilized by primary producers and consumers"

10/5/04 Fairfield University, Environmental Studies Program, Seminar Series (honorarium).
"Mysteries of the Deep Ocean: Life Without Light"

2/5/02 University of Virginia, Department of Environmental Sciences
"Life without light: Exploring the deep-sea communities in the Gulf of Mexico

10/12/01 Georgetown University, Biology Department (honorarium)
"Life without light: Exploring the trophic interactions among chemosynthetic and heterotrophic fauna in the Gulf of Mexico"

11/23/98 Fairfield University, Marine Science Program and Department of Biology (honorarium)
"Life without light: Exploring the deep-sea communities in the Gulf of Mexico"

10/18/98 Virginia Commonwealth University, Center for Environmental Studies
"Investigations of hydrocarbon seep communities using stable isotopes"

**OTHER RESEARCH:**

RECENT STUDENT GRANTS

*Hemlinich Award.* 2011. Kimmy Kraeer (MS Biology)

*COSMOS Foundation*. 2010. Graduate student Stephanie Sarriano. "Seasonal nutrient dynamics in the Anacostia as shown by stable isotopes and fatty acid biomarkers"

- Award received; $2,000

*Dean's undergraduate research award.* 2010. Deborah Frantz (BS Marine Science)

*Hemlinich Award.* 2009 Stephen Lazeroff (MS Biology)

*Grebe Award,* 2008. American University Biology Department undergraduate student Andrew Frank. "Surface versus cave Amphipods: metabolic adaptation to the cave environment"

- Award received; $1,500

*COSMOS Foundation*. 2008. Graduate student Natalie Hanson. Surface versus Cave Amphipods: metabolic adaptation to the cave environment

- Award received; $2,000

*Cave Conservancy Foundation of Virginia, Fellowship* 2007/08. graduate student Natalie Hanson. "Quantifying Metabolic Adaptation to the Cave Environment: a Stable Isotope Approach"

- Awarded received; $5,000

RESEARCH CRUISES

2002 June. RV Seward Johnson II/Johnson Sea-Link Submersible (Harbor Branch Oceanographic). Ocean Exploration Cruise to Gulf of Mexico Hydrocarbon Seeps

2002 March. RV Seward Johnson II/Johnson Sea-Link Submersible (Harbor Branch Oceanographic). Role of nutrient availability on reproduction of mixotrophic mussels (*Bathymodiolus childressi*) in Gulf of Mexico chemosynthetic communities

1998 July. RV Edwin Link/Johnson Sea-Link Submersible (Harbor Branch Oceanographic), Dives 4029-4054. Stability and Change: chemosynthetic communities in the Gulf of Mexico

**MEDIA APPEARENCES**

Swiss TV, RSI News. 11/16/18. Climate change, land use and fire.
https://www.rsi.ch/news/mondo/California-oltre-1000-dispersi-11106774.html

Earth Magazine. *5/26/17.* Down to Earth With: Biogeochemist Stephen MacAvoy.
https://www.earthmagazine.org/article/down-earth-biogeochemist-stephen-macavoy

WTOP radio/web: 5/14/2014. Green roofs could be the answer to clean D.C.'s rivers.
http://www.wtop.com/41/3621654/Green-roofs-could-be-the-answer-to-clean-DCs-rivers
Also appeared in **Washington Post, Washington Times** and other news outlets.

ABC Channel 7 (WJLA). 4/22/2014. Researchers install environmentally-friendly 'green roofs' in D.C. http://www.wjla.com/articles/2014/04/researchers-install-environmentally-friendly-green-roofs-in-d-c--102396.html

WSB-TV Atlanta. 3/7/2014. NASA Technology and Sinkholes (COX).

Al Arabiya News Channel. 6/7/2012. Views on state shift in earth's biosphere. To air on 6/9/12
http://www.youtube.com/watch?v=rqH-iIG08jA

PressTV (English language Iran). 3/5/2012. BP faces heavy fines in Gulf oil spill settlement.
http://www.presstv.ir/detail/230178.html

TV Globo / Globo News (Brazil). 1/18/2011. Climate change and extreme weather events.
http://globonews.globo.com/Jornalismo/GN/0,,MUL1642294-17665-310,00.html

National Public Radio, Morning edition. 10/2/2006. Interview about snakehead catfish in the DC area.

FOX NEWS CHANNEL 5, WTTG TV. 9/18/2006. Fish used to detect attacks on water supply.

**TEACHING RESPONSIBILITIES**

Courses taught between F2001 and S2003 by semester

| | |
|---|---|
| Fall 2001 | BIO 110 General Biology I (two sections)<br>BIO 220 General Biology II |
| Spring 2002 | BIO 100 Great Experiments in Biology (two sections of 75)<br>BIO 396 Marine Mammals |
| Summer 2002 | BIO 100 Great Experiments in Biology (session 1)<br>BIO 100 Great Experiments in Biology (session 2) |
| Fall 2002 | BIO 100 Great Experiments in Biology<br>CHEM 220 Environmental Resources and Energy<br>ENVS-102 Seminar in Environmental Issues |
| Spring 2003 | BIO 100 Great Experiments in Biology<br>CHEM 100 Molecular World<br>ENVS-102 Seminar in Environmental Issues |

Courses taught since 2003 by semester

| | |
|---|---|
| Fall 2003 | BIO 100 Great Experiments in Biology |
| Spring 2004 | CHEM 400 Geology<br>CHEM 100 Molecular World<br>ENVS 581 Environmental Science II |
| Fall 2004 | BIO 100 Great Experiments in Biology (two sections of 75 each) |
| Spring 2005 | ENVS 581 Environmental Science II<br>BIO 499 Senior Seminar<br>BIO 100 Great Experiments in Biology |
| Summer 2005 | BIO 100 Great Experiments in Biology |
| Fall 2005 | BIO 100 Great Experiments in Biology<br>ENVS 581 Environmental Science II<br>ENVS 696 Environmental Geology |
| Spring 2006 | Junior Leave |
| Summer 2006 | BIO 100 Great Experiments in Biology |
| Fall 2006 | BIO 240 Oceanography<br>ENVS 696 Environmental Problem Solving |
| Spring 2007 | BIO 240 Oceanography (two sections of 45)<br>ENVS 581 Environmental Science II |
| Summer 2007 | BIO 240 Oceanography |

| | |
|---|---|
| Fall 2007 | BIO 240 Oceanography<br>ENVS 696 Environmental Geology |
| Spring 2008 | BIO 240 Oceanography (two sections of 45)<br>ENVS 581 Environmental Science II |
| Summer 2008 | BIO 240 Oceanography |
| Fall 2008 | ENVS 396/696 Science and Policy of Energy and Climate<br>BIO 240 Oceanography |
| Spring 2009 | ENVS 581 Environmental Science II<br>BIO 240 Oceanography |
| Summer 2009 | BIO 240 Oceanography |
| Fall 2009 | ENVS 581 Environmental Science II<br>ENVS 396/696 Environmental Geology |
| Summer 2010 | BIO 240 Oceanography |
| Fall 2010 | ENVS 520 Biogeochemistry<br>ENVS 360 Atmosphere and the Environment |
| Spring 2011 | ENVS 220 Environmental Resources and Energy<br>ENVS 581 Environmental Science II |
| Summer 2011 | BIO 240 Oceanography |
| Fall 2011 | ENVS 492 Senior Capstone<br>ENVS 350 Environmental Geology |
| Spring 2012 | ENVS 360 Atmosphere and the Environment<br>ENVS 581 Environmental Science II |
| Summer 2012 | BIO 240 Oceanography |
| Fall 2012 | ENVS 492 Senior Capstone<br>ENVS 150 Lab Coordinator Sustainable Earth |
| Spring 2013 | ENVS 360 Atmosphere and the Environment<br>ENVS 150 Lab Coordinator Sustainable Earth |
| Summer 2013 | BIO 240 Oceanography |
| Fall 2013 | ENVS 491 Internship Coordinator<br>ENVS 196 Environmental Science for Majors |
| Spring 2014 | ENVS 581 Environmental Science II<br>ENVS 150 Sustainable Earth<br>ENVS 491 Internship Coordinator |

| | |
|---|---|
| Summer 2014 | BIO 240 Oceanography<br>ENVS 491 Internship Coordinator |
| Fall 2014 | HNRS-200 Honors Core I: Climate Change Science, Politics and Policy<br>ENVS-350 Environmental Geology |
| Spring 2015 | ENVS 460/660 Climatology |
| Fall 2015 | HNRS-200 Honors Core I: Climate Change Science, Politics and Policy<br>ENVS 492 Senior Capstone |
| Spring 2016 | Sabbatical |
| Summer 2016 | ENVS 220 Environmental Resources and Energy |
| Fall 2016 | HNRS-200 Honors Core I: Climate Change Science, Politics and Policy<br>ENVS 491 Internship Coordinator |
| Spring 2017 | ENVS 520 Biogeochemistry<br>ENVS 491 Internship Coordinator |

GRADUATE/UNDERGRADUATE PROJECTS SUPERVISED

MS Chair

1. Ethan Bassett, MS advisor. 2005. Measuring turnover rates and nutrient allocation to various tissues in mice (*Mus musculus*) using stable isotope analysis. completed 2005
   Portions of this work have been published in *Oecologia.*
2. Natalie Hansen, MS advisor. 2008. Seasonal trends in nutrient flow in a tidal freshwater stream.
   Portions of this work have been published in *Canadian Journal of Zoology*.
3. Stephen Lazaroff, MS advisor. Effect of metabolic rate on nutrient incorporation in male and female mice (*Mus musculus*). Start 2008. Did not complete thesis.
   Portions of this work have been published in *Canadian Journal of Zoology*.
4. Wahida Akberzie, MS advisor. 2010. Effects of diet nutrient composition on metabolism and tissue replacement in zebra fish (*Danio rerio*).
5. Dina Lloyd, MS advisor. Divergent evolution: cave vs. surface fishes metabolism and tissue replacement rates. Start 2009. Did not complete thesis.
6. Kimmy Kraeer, MS advisor. 2011. Metabolic tissue turnover and rate in two strains of Rat.
   Portions of this work have been published in *Ecological Research*.
7. Stephanie Sarraino (substantial research project). 2011. Nutrient sources and geochemical condition of the Anacostia River, Washington DC.
   Portions of this work have been published in *Applied Geochemistry*.
8. Nicholas Connor (substantial research project). 2013. Geochemistry of an urban watershed.
   Portions of this work have been published in *Applied Geochemistry*.
9. MinJung Kim, MS advisor. 2015. Examination of anthropogenic nutrient additions to coastal mangrove communities: A multiple isotope approach.
   Portions of this work have been published in *The Journal of Shellfish Research*

10. Sydney Mucha, MS advisor. 2016. Effectiveness of green roofs for removing pollutants from runoff

Portions of this work have been published in *Nitrogen* and *Ecological Engineering*

11. Ashley Acevedo, MS advisor. 2020. Organic contaminants in the Anacostia.
12. Kristina Nicholas, Slioxanes and PAHs in the Anacostia and Potomac Rivers

MS Committee Member

1. Rania Tarboush MS thesis co-advised. Growth and metabolism contribute to the turnover of stable isotopes in the zebrafish, *Danio rerio.* completed 2003

Portions of this work have been published in *Canadian Journal of Zoology*

2. David Baker MS thesis co-advised . Assessing pollution in gorgonians using a $^{15}N$ isotope analysis. completed 2004

Portions of this work have been published in *Marine Ecology Progress Series*

3. Kirby Webster. 2006. Octocorals as indicators of anthropogenic nutrients.
4. Ken Jenson. 2007. Detection of Tetracycline resistant bacteria in ecologically disturbed environments.
5. Evan Ewers. 2009. Polycyclic Aromatic Hydrocarbon-degrading Bacteria in the Anacostia River, Washington, DC: Presence and Metabolic Capabilities. Completed 2009.

Portions of this work have been published in *Ecological Monitoring*.

6. Marco Pelli. 2011. Zebra fish retinia development.
7. Vince Bacalan. 2011. Nitrogen pollution over time in Florida as revealed by stable isotope analysis of manatee bones.
8. Susie Vulpas, 2014. Determining growth ring patterns in *Avicennia marina* and identifying periodicity of $\delta^{13}C$
9. Jacob Melone. 2015. Urban land use change impact on stream chemistry.
10. John Cybulski 2016. Using paleoecological data to reconstruct Guam's coral reef community.
11. Matt LeFauve 2016. Impacts of environmental toxins on visual perception an visual system physiology in zebrafish (*Danio rerio*).
12. Hossein Kharazi 2019. Using radon as a groundwater tracer for seeps in Chain Bridge Park, VA.
13. Rebecca Wilken 2017. Eye development and environmental pollutants.
14. William Jessup, 2018. Zebra fish endocrine disruption
15. William Farmer, 2019. Trophic ecology of seep amphipods
16. Jesse Wiegand, 2019. Effects of siloxanes on zebra fish development
17. Elizabeth Sartain. 2022. Light and dark responses of *Gammarus minus*.
18. Eliza Davey
19. Jennifer Silva

Capstone Project advised or co-advised

1. Ethan Bassett BS Honors thesis co-advised. Nutrient usage and carbon/nitrogen turnover rates of small mammals . completed 2004. WINNER: College of Arts and Sciences, Capstone Honors Thesis Award

This work has been published in Canadian Journal of Zoology 84(7):983-993.

2. Jeremy Silver BA ENVS Honors thesis. Diet nutrient content and tissue turnover in *Mus musculus*. Completed May 2008
3. Carrie Johnson BA SPA Political attitudes towards wind energy in South Dakota

Independent Studies (partial list)

1. Mansfield, Jason. BIO 490. Carbon turnover of mouse blood. 2002
2. Pascual, Roberto. Environmental degradation in Panama Bay. 2002
3. Jamil, Tahir. BIO 490. Nitrogen and carbon turnover in different mouse tissues. 2003
4. Andita Caesar . BIO 490. Growth versus metabolic tissue replacement in mouse tissues determined by stable sulfur analysis . Spring 2005.
5. Jake Sirkin. BIO 490. Seasonal changes in nutrient flow in a VA tidal freshwater stream. 2005
6. Brandy Wells. Preliminary Report on the Phylogeny of Fossil Crinoid Genus *Gilbertsocrinus.* 2006
7. Emily Snyder Carnegie Geophysical Laboratory intern. 2007
8. Kristen Manusco, Carnegie Geophysical Laboratory intern. 2007
9. Jennifer Ross, ENVS 691. Deep-sea mussel fatty acid extraction. 2008
10. Cristina Cordona , ENVS 690. Climate variables influence the distribution of Lyme Disease. 2009
11. Kisei Tanaka. ENVS 691. 2010.
12. Jon Rhodes. ENVS 691. Isotope Geography of manatees. 2011
13. Nicholas Conner, ENVS 691. Anacostia Geochemistry. 2011
14. Jen Jones, ENVS 490. Organic contaminants in Anacostia clams. 2011
15. Hitesh Pant, ENVS 490. Anacostia Geochemistry. 2011
16. Stephanie Buglione, ENVS 490. Anacostia Geochemistry. 2011
17. Eric Tengi, ENVS 490. Amphipod trophic dynamics. 2012
18. Alice Clifford, ENVS 490. Green roof effectiveness. 2013
19. Kim Lindegren, ENVS 490. Episodic geochemistry of Anacostia. 2013
20. Katie Plank, ENVS 490. Effectiveness of green roofs for nutrient uptake. 2013
21. Rianna Eckel, ENVS 490. Effectiveness of green roofs for nutrient uptake, 2014
23. William Farmer, ENVS 490. Amphipod climate resilience, 2017
24. Ashley Acevedo, ENVS 490. Anacostia geochemistry 2017
25. Richared Acevedo, ENVS 490. Anacostia geochemistry 2018
26. Karli Wensel, Zebra fish endocrine disruption, 2017
27. William Jessup, Zebra fish endocrine disruption, 2017

Other

1. Shoal Roj, Research project for a class. Chemosynthetic production contributions to predators in Gulf of Mexico. 2003
2. Eric Morgan, deans award for summer research, 2004. $3000. Dependence of invertebrate predators on chemosynthetic primary production in the Gulf of Mexico. Completed Spring 2005, Presented at CAS Research Forum 2005
   Portions of the work appeared in peer-reviewed The Journal of Shellfish Research in 2008
3. Tim McCune, SRP. 2005. Suggestions for how to make Belize's protected areas more effective.
4. Vanessa McKinney, SRP. 2006. What are the effects of ocean acidification upon stratospheric ozone and the resultant consequences for human health?
5. Marysia Szymkowiak, SRP. 2008. Conserving the cod fishery on the Baltic Sea.
6. Andrew Frank, Grebe Award for summer research. Metabolic tissue turnover in surface and cave amphipods from West Virginia.

**CURRICULUM DEVELOPMENT**

New course development:

ENVS 260/160 Environmental Science I and II for majors, Laboratories and Lectures
ENVS 350 Environmental Geology
ENVS 396 Environmental Problem Solving
ENVS 396/696 Science and Policy of Climate and Energy
ENVS 492 Senior Capstone in Environmental Science
ENVS 460/660 Climatology
ENVS 520 Biogeochemistry
ENVS 150 Sustainable Earth. Laboratory Curriculum
ENVS 160/260 Introduction to Environmental Science I and II.
ENVS 160 Laboratory Curriculum.

Development of PhD curriculum in Environmental Science (as part of a committee).
Revamp of BIO 100 Great Experiments in Biology. Integration of laboratories and lecture. Re-evaluation of course objectives

**UNIVERSITY SERVICE AND OUTREACH:**

*Search committee Urban Carbon Dynamics* American University, 2018
*Dean's Advisory Committee,* 2015-2016
*Hall of Science Building Committee,* 2015-present
*Science Rank and Tenure* 2015-present
*Research Selection Committee: Cities Alive. Green Roof and Wall Conference* 2015-present
*Graduate Program Director, Environmental Sciences* 2004-present
*Search committee Urban Climatology* American University, 2015
*Search committee Environmental Anthropology* American University, 20013-2014
*Benefits and Budget Committee, University Senate* 2011-2013
*MS in Sustainability Management working group* 2010-2013
*Science Rank and Tenure* 2010-2013
*American University Institutional Animal Care and Use Committee,* 2009-2012
*Search committee Ecohydrology* American University, 20010-11
*White Oak Middle School, Science Outreach,* 2009
*EPC Curriculum Committee,* American University, 2007-2009 (Co-Chair 2008-09)
*EPC Steering Committee,* American University, 2007-2009 (appointed co-chair 08/09)
*Environmental Science PhD Curriculum Development Committee,* American University, 2007-present
*Search committee Cell Biology* American University, 2007-8
*Environmental Coordinator Search Committee.* American University, 2007
*Science Building renovation committee,* American University, 2006-2009
*Environmental Issues Project Team,* American University, 2003-2009. Co-Chair 2005-2009?
*Chair of Graduate Program in Environmental Studies:* Biology Department, American University, 2003-present
*Undergraduate Program in Environmental Studies Committee:* Biology Department, American University, 2003-2004, 2006-2008
*Dean's Ad-hoc committee for Merit evaluation:* 2004
*Rank and Tenure Committee:* Biology Department, American University 2003-2004
*Graduate Program in Environmental Studies Committee:* Biology Department , American University, 2001-2002
*Judge*; Edmund Burke Middle School Science Fair, Feb 12, 2003
*Judiciary Committee Service:* Honor trial judge. American University, 2002
*Web Page Coordinator*. Biology Department, American University, 2001-2003.
*Graduate Arts and Science Spotlight*: 2000. Research presentation video clip sent on CD to prospective graduate students in Arts and Sciences, 2000-2001

• Copies of the 8 megabyte movie are available upon request

*Judge:* Envirodays judiciary board member, University of Virginia, 1995 and 1998

• Evaluated student presentations of original research

*President*: Student Environmental Association, Fairfield University, 1990-91

**PROFESSIONAL AFFILIATIONS (CURRENT)**

American Geophysical Union, *Alpha Epsilon Delta* (biology honor society)

**REVIEWED MANUSCRIPTS FOR FOLLOWING JOURNALS**

(1) Fisheries Bulletin (2) Aquatic Geochemistry, (3) Deep-Sea Research, (4) Limnology and Oceanography, (5) Journal of Aquatic Animal Health, (6) Aquaculture, (7) Phytopathology, (8) Marine and Freshwater Research, (9) North American Journal of Fisheries Management, (10) Organic Geochemistry, (11) Oecologia, (12) Marine Ecology, (13) Functional Ecology, (14) Canadian Journal of Zoology, (15) Journal of Experimental Marine Biology and Ecology, (17) Okios, (18) Chemical Geology, (19) Rapid Communications in Mass Spectrometry, (20) Canadian Journal of Fisheries and Aquatic Sciences, (21) Physiological and Biochemical Zoology, (22) Annales de Limnologie International Journal of Limnology, (23) Marine Ecology Progress Series, (24) Ecosystems, (25) Comparative Biochemistry and Physiology, (26) Behavioral Ecology, (27) Journal of the Marine Biological Association of the United Kingdom, (28) Journal of Hydrology, (29) Journal of Environmental Monitoring and Assessment

**REVIEWED CHAPTER(S) IN FOLLOWING TEXTBOOKS**

Belk and Borden, 2003. Biology: Science for Life, 1st ed. Pearson Education
Wand, Okin and Macko. 2009. Isoscapes: Understanding movement, pattern, and process on Earth through isotope mapping. Springer
Keller. 2010. Environmental Geology, Pearson
McKinney, Schoch and Yonavjak. 2014. Environmental Science Systems and Solutions 5th ed. Jones and Bartlett

**REVIEWED PROPOSALS FOR FOLLOWING ORGANIZATIONS**

The Petroleum Research Fund (American Chemical Society)
USGS Maine Water Resources Institute Program
Maine Sea Grant
NSF (Climate Education)
EPA (Chesapeake fisheries models)
Hudson River Foundation