

Bopaiah Achia Biddanda
Professor of Water Resources
Annis Water Resources Institute (AWRI)
Grand Valley State University (GVSU)
740 West Shoreline Drive, Muskegon, MI 49441, USA.
Work Phone: 612-331-3978; Fax: 612-331-3864
Lab Website: <http://www.gvsu.edu/wri/biddanda/>

Brief Biosketch: I am an *aquatic microbial ecologist/carbon biogeochemist* studying the flux of carbon driven by microbes in freshwater ecosystems. I have a Ph.D. in *Ecology* from the University of Georgia where I explored new mechanisms of microbial carbon flux in the sea. Subsequently, I went on research and teaching adventures at the Alfred Wegener Institute for Polar and Marine Research (Germany), University of Texas Marine Science Institute, University of Rio Grande (Brazil) and University of Minnesota. Currently, at GVSU, I study and teach about the microbial biogeochemistry of the Laurentian Great Lakes – exploring life in extreme environments, teaching classes in *Microbial Ecology* and *Biogeochemistry*, operating a world-class time-series buoy observatory in a Great Lakes estuary, serving on the board of international journals, and coordinating NASA’s Michigan Space Grant Consortium programs for the University. *I hope to study Earth’s lakes as sentinels of both local and global change focusing on the changing carbon cycle in one of our most vital global commons: freshwater.*

(a) Professional Preparation:

Ph.D.	Ecology	University of Georgia, USA	1987
<i>(Thesis: New Mechanisms for Energy Flow in the Ocean’s Food Web: Microbial Use of Detritus).</i>			
M.Sc.	Marine Biology	Karnatak University, India	1980
B.Sc.	Biology	Bangalore University, India	1978

(b) Appointments:

2013: Professor of Water Resources, Grand Valley State U, Annis Water Res. Inst. (AWRI).
Research Area: Aquatic Microbial Ecology and Carbon Biogeochemistry
Teaching: BIO 699 Microbial Ecology; WAT/BIO 550 Ecosystem Biogeochemistry; BIO 370 Marine Biology; ENS 310 How the Biosphere Works.

2002-2013: Assistant Professor/Associate Professor and Research Scientist, GVSU-AWRI.

1998-2002. Research Associate, Dept of Ecology, Evolution and Behavior, Univ. Minnesota.

1997-1998. Visiting Professor of Marine Microbiology, Univ. of Rio Grande, Brazil.

1992-1997. Research Scientist Associate, Univ. of Texas Marine Science Institute.

1987-1991. Guest Scientist, Alfred Wegener Institute for Polar and Marine Research, Germany.

1982-1987. Graduate Research Assistant, Institute of Ecology, Univ. of Georgia.

1980-1982. Junior Research Fellow, National Institute of Oceanography, India.

Select Awards:

Executive Board and Affiliate Representative, Michigan Space Grants Consortium, NASA (2011-).

Fellow, Cooperative Institute for Great Lakes Research, U. Michigan (2010-).

Scientist-Educator, Centers for Ocean Science Education Excellence (COSEE)-Great Lakes (2010).

Chandler-Misener Award, International Association for Great Lakes Research (2009).

Leadership & Continuing Service Award, College Liberal Arts & Sciences, GVSU (2006).

Best Ecology Student Paper Award (Marine Ecology Progress Series 1985), U. Georgia (1985).

Recent Past & Current Federal Funding (~1 million last 5 yrs): EPA-GLRI (\$660,000, 2010-13) Lake Observatory; NSF-EAGER + Geobiology (\$141,000, 2011-2019); MSU-WIRG Water Research (\$99,000, 2012-14); NOAA-CILER Lake Sentinel + Post Doc + Graduate (\$290,000, 2014-2018); NASA-MSGC Research (\$45,000, 2012-2019).

(c) Peer-reviewed Publications (# indicates 20 most significant pubs; *indicates student authors)

- # **Biddanda**, B. A., Weinke, A. D., Kendall, S., Gereaux, L. *, Snider, M. *, Dila, D. *, Long, S., VandenBerg, C. *, Knapp, K. *, Thompson, K., Ogdahl, M., Liu, Q., Johengen, T., Anderson, E. and Ruberg, S. (2018). Chronicles of Hypoxia: Time-series buoy observations reveal annually recurring seasonal basin-wide hypoxia in a Great Lakes estuary. *J. Great Lakes Res.* 44: 219-229. <https://www.sciencedirect.com/science/article/pii/S0380133018300029>
- Villa-Argaiz, M., J. M. Medina-Sanchez, B. A. **Biddanda** and P. Carrillo (2018). Predominant non-additive effects of multiple stressors on autotroph C:N:P ratios propagate in freshwater and marine food webs. *Frontiers Microbiology*. 9:69. doi: 10.3389/fmicb.2018.00069 <https://www.frontiersin.org/articles/10.3389/fmicb.2018.00069/full>
- Weinke, A.D., B. A. **Biddanda** (2018). From Bacteria to Fish: Ecological consequences of seasonal hypoxia in a Great Lakes estuary. *J. Great lakes Research*. 21: 426-442. <https://link.springer.com/article/10.1007/s10021-017-0160-x>
- # **Biddanda**, B.A. 2017. Global significance of the changing freshwater carbon cycle. *Eos, American Geophysical Union* 98(6): 15-17. <https://doi.org/10.1029/2017EO069751>
- # Cotner, J.B., A.D. Weinke, and B.A. **Biddanda**. 2017. Great Lakes: Science can keep them great. *J. Great Lakes Res.* 43: 916-919. <https://doi.org/10.1016/j.jglr.2017.07.002>
- Snider, M. *, **Biddanda**, B. A., Lindback, M. *, Grim, S. *, & Dick, G. (2017). Versatile photophysiology of compositionally similar cyanobacterial mat communities inhabiting submerged sinkholes of Lake Huron. *Aquat. Microb. Ecol.*, 79:63-78. http://www.int-res.com/articles/ame_oa/a079p063.pdf
- Sharrar, A.,* B. Flood., J. Bailey, D. Jones. B.A. **Biddanda**, S. Ruberg, D. Marcus and G. Dick. 2017. Novel large sulfur bacteria in the metagenomes of groundwater-fed chemosynthetic microbial mats in the Lake Huron basin. *Frontiers in Microbiology* 8: 791. doi: 10.3389/fmicb.2017.00791
- Salk, K. R., P. H. Ostrom, B. A. **Biddanda**, A. D. Weinke, S. T. Kendall and N. E. Ostrom (2016). Ecosystem metabolism and greenhouse gas production in a mesotrophic northern temperate lake experiencing seasonal hypoxia. *Biogeochemistry* 131: 303-319.
- Defore, A. L., A. D. Weinke, M. M. Lindback, and B. A. **Biddanda** (2016). Year-round measures of planktonic metabolism reveal net autotrophy in surface waters of a Great Lakes estuary. *Aquatic Microbial Ecology*. 77: 139-153.
- # **Biddanda** BA, McMillan AC*, Long SA*, Snider MJ* and Weinke AD* (2015) Seeking sunlight: rapid phototactic motility of filamentous mat-forming cyanobacteria optimize photosynthesis and enhance carbon burial in Lake Huron's submerged sinkholes. *Front. Microbiol.* 6:930. doi: 10.3389/fmicb.2015.00930
- # Dila, D.K*., **Biddanda**, B.A. (2015). From land to lake: Contrasting microbial processes across Great Lakes gradient of carbon and nutrient inventories. *J. Great Lakes Res* 41:75-85. <http://www.sciencedirect.com/science/article/pii/S0380133015001239>
- Voorhies, A. A. *, Eisenlord, S.D., Marcus, D. M. *, Duhaime, M. B., **Biddanda**, B. A., Cavalcoli, J. D., and Dick, G. J. (In Press, 2015). Ecological and genetic interactions between cyanobacteria and viruses in a low-O₂ mat community inferred through metagenomics and metatranscriptomics. *Environmental Microbiology*.

- Vail, J., A. Meyer, A. Weinke* and B. **Biddanda** (2015): Water quality monitoring: Lesson plan for exploring time-series data. *J. Michigan Teachers Association* 6: 37-48.
- McNair, J.N., Sesselmann*, M.R., Gereaux*, L.C., Weinke*, A.D., Kendall, S.T., and **Biddanda**, B.A. (2015). Alternative approaches for estimating components of lake metabolism using the free-water dissolved-oxygen (FWDO) method. *Fundamental and Applied Limnology*. 186: 21-44.
- # Weinke, A. D.,* Kendall, S. T., Kroll, D. J.,* Strickler, E. A.,* Weinert, M. E.,* Holcomb, T. M.,* Defore, A. A.,* Dila, D. K.,* Snider, M. J.,* Gereaux, L. C., * and B. A. **Biddanda**. 2014. Systematically variable planktonic carbon metabolism along a land-to-lake gradient in a Great Lakes coastal zone. *J. Plankton Res.* 36: 1528–1542.
- Nold, S. C., M.J. Bellecourt*, S.T. Kendall, S.A. Ruberg, T.G. and B.A. **Biddanda** (2013): Underwater sinkhole sediments sequester Lake Huron’s carbon. *Biogeochemistry* 115: 235-250.
- McNair, J. N., L. C. Gereaux, A. Weinke, M. Sesselmann. S. Kendall and B. **Biddanda** (2013): New methods for estimating components of lake metabolism based on free-water dissolved- oxygen dynamics. *Ecological Modelling* 263: 251-263.
- # Voorhies, A.*, B. **Biddanda**, S. Nold, S. Kendall, S. Jain*, D. Marcus*, N. Sheldon and G. Dick. (2012). Cyanobacterial life at low O₂: Community genomics and function reveal metabolic versatility & extremely low diversity. *Geobiology* 10(3): 250-267.
- # **Biddanda**, B., S. Nold, G. Dick, S. Kendall, J. Vail, S. Ruberg and C. Green (2012). Rock, Water, Microbes: Sinkholes in Lake Huron are habitats for ancient microbial life. *Nature Education Knowledge* 3 (3): 13. <http://www.nature.com/scitable/knowledge/library/rock-water-microbes-underwater-sinkholes-in-lake-25851285>.
- Scientist-Educator Recognition, Centers for Ocean Science Education Excellence (2011).**
- Sanders, Jr. T. G.*, B. A. **Biddanda**, C. A. Stricker, S. C. Nold (Feb 2011): Stable isotope analysis reveals benthic macroinvertebrate and fish communities linked to submerged groundwater vents in Lake Huron. *Aquatic Biology* 12: 1-11. **Featured Article.**
- Steinman, A. D., M. Ogdahl, K. Wessell, B. **Biddanda**, S. Kendall and S. Nold (2011). Periphyton response to simulated nonpoint source pollution: local over regional control. *Aquatic Ecology* 45: 439-454. DOI 10.1007/s10452-011-9366-8
- Nold, S. C., H. A. Zajack* and B. A. **Biddanda** (2010): Archaeal and Eukaryal Diversity in a Submerged Sinkhole Ecosystem Influenced by Sulfur-Rich, Hypoxic Groundwater. *Journal of Great Lakes Research* 36: 366-375.
- Nold, S. C., J. P. Pangborn*, H. Zajack*, S. Kendall, R. Rediske and B. A. **Biddanda** (2010): Benthic bacterial diversity in submerged sinkhole ecosystems. *Applied and Environmental Microbiology*, 76: 347-351.
- # **Biddanda**, B. A., S. C. Nold, S. A. Ruberg, S. T. Kendall, T. G. Sanders*, and J. J. Gray (2009). Great Lakes Sinkholes: A Microbiogeochemical Frontier. *Eos, Transactions, American Geophysical Union (AGU)* 90: 61-62. **AGU Press Release.**
- Baskaran, M., P. W. Swarzenski, and B. A. **Biddanda** (2009), Constraints on the utility of MnO₂ cartridge method for the extraction of radionuclides: A case study using ²³⁴Th. *Geochemistry, Geophysics, Geosystems* 10, Q04011, doi:10.1029/2008GC002340.
- Biddanda**, B. A., A. Steinman, L. Nemeth, Y. Hong and S. Kendall (2008). Nutrient bioassays of plankton biomass and metabolism in an urbanized drowned river-mouth lake (Mona Lake, Michigan). *J. Freshwater Ecology* 23 (1): 41-53.
- Ruberg, S. A., S. T. Kendall, B. A. **Biddanda**, T. Black, W. Lusardi, R. Green, T. Casserley, E. Smith, S. Nold, T. G. Sanders*, G. Lang and S. Constant (2008). Observations of the Middle

- Island sinkhole in Lake Huron: a unique hydrologic and glacial creation of 400 million years. *Marine Technology Society Journal*. 42: 12-21.
- Kerfoot, C. R., J. W. Budd, S. Green, J. B. Cotner, B. A. **Biddanda** and D. J. Schwab (2008). Doughnut in the desert: late-winter production in southern Lake Michigan. *Limnology and Oceanography* 53: 589-604.
- # Johengen, T.H., B. A. **Biddanda** and J. B. Cotner (2008): Stimulation of Lake Michigan plankton metabolism by sediment resuspension and river runoff. *Journal of Great Lakes Res* 34: 213-227. **Chandler-Misener Award, International Assoc. Great Lakes Research.**
- Steinman, A., M. Ogdahl, R. Rediske, C. Ruetz, B. **Biddanda** and L. Nemeth. (2008): Current status and trends in Muskegon Lake, Michigan. *J. Great Lakes Research* 34: 169-188.
- Steinman, A. D., B. A. **Biddanda**, M. Chu, K. Thompson and R. Rediske (2007). Environmental analysis of groundwater in Mecosta County, Michigan. *Environmental Monitoring and Assessment*, 134: 177-189.
- # **Biddanda**, B. A., D. F. Coleman, T. H. Johengen, S. A. Ruberg, G. A. Meadows, H. W. VanSumeren, R. R. Rediske and S. T. Kendall (2006): Exploration of a submerged sinkhole ecosystem in Lake Huron. *Ecosystems*, 9 (5): 828-842.
- Steinman, A. D., Rediske, R., Denning, R., Nemeth, L., Chu, X., Uzarski, D., **Biddanda**, B. and Luttenton, M. (2006). An environmental assessment of an impacted, urbanized watershed: the Mona Lake Watershed, Michigan. *Arch. Hydrobiol.* 166: 117-144.
- Hong, Y., Steinman, A., **Biddanda**, B., Rediske, R. and Fahnenstiel, G (2006). Occurrence of toxin-producing cyanobacterium *Cylindrospermopsis raciborskii* in Mona and Muskegon. *Lakes. J. Great Lakes Res.* 32: 645-652.
- Cotner, J. B., W. Makino and B. A. **Biddanda** (2006): Temperature affects stoichiometry and biochemical composition of *Escherichia coli*. *Microbial Ecology*, 52; 26-33.
- Ruberg, S. A., D. F. Coleman, T. H. Johengen, G. A. Lang and B. A. **Biddanda**. (2005). Groundwater plume mapping in a submerged sinkhole in Lake Huron. *Marine Technology Society Journal*. 39: 65-69.
- Cotner, J. B., B. A. **Biddanda**, E. Stets and W. Makino (2004). Organic carbon biogeochemistry of Lake Superior. *Aquatic Ecosystem Health and Management*. 7(4): 1-14.
- Anesio, A. M.*, P. C. Abreu and B. A. **Biddanda** (2003): Role of free and attached Microorganisms in the decomposition of estuarine macrophyte detritus. *Estuarine, Coastal Shelf Science*, 56: 197-201.
- Biddanda**, B. A. and J. B. Cotner (2003): Enhancement of dissolved organic matter bioavailability by sunlight and its role in the carbon cycle of Lakes Superior and Michigan. *Journal of Great Lakes Research*, 29: 228-241.
- Abreu, P. C., L. R. Rorig,* V. Garcia, C. Odebrecht and B. **Biddanda** (2003). Decoupling between bacteria and the surf-zone diatom *Asterionellopsis glacialis* at Cassino Beach, Brazil. *Aquatic Microbial Ecology*, 32: 219-228.
- # **Biddanda**, B. A. and J. B. Cotner (2002): Love handles in aquatic ecosystems: Role of dissolved organic carbon drawdown, resuspended sediments and terrigenous inputs in the carbon balance of Lake Michigan. *Ecosystems*, 5:431-445.
- # Cotner, J. B. and B. A. **Biddanda** (2002): Small players, large role: Microbial influence on biogeochemical processes in pelagic aquatic ecosystems. *Ecosystems*, 5: 105-121.
- Cotner, J. B., M. L. Ogdahl* and B. A. **Biddanda** (2001): Double-stranded DNA measurement in lakes with the fluorescent stain PicoGreen and application to bacterial bioassays. *Aquatic Microbial Ecology*, 25: 65-74.

- # **Biddanda**, B. A., M. L. Ogdahl* and J. B. Cotner (2001): Dominance of bacterial metabolism in oligotrophic relative to eutrophic waters. *Limnology and Oceanography*, 46 (3): 731-739.
- Cotner, J. B., T. H. Johengen and B. A. **Biddanda** (2000): Intense winter heterotrophic production stimulated by benthic resuspension. *Limnology and Oceanography*, 45: 1672-1676.
- Skoog, A., B. **Biddanda** and R. Benner (1999): Bacterial utilization of dissolved glucose in the upper water column of the Gulf of Mexico. *Limnology and Oceanography*, 44: 1625-1633
- Benner, R. and B. **Biddanda** (1998): Photochemical transformations of surface and deep dissolved organic matter: Effects on bacterial growth. *Limnology and Oceanography*, 43: 1373-1378.
- # **Biddanda**, B and R. Benner (1997): Major contribution from mesopelagic plankton to heterotrophic metabolism in the upper ocean. *Deep-Sea Research*, 44: 2069-2085.
- Benner, R., B. **Biddanda**, B. Black and M. McCarthy (1997): Abundance, size-distribution, and Stable carbon and nitrogen isotopic compositions of marine organic matter isolated by tangential-flow ultrafiltration. *Marine Chemistry*, 57, 243-263.
- # **Biddanda**, B and R. Benner (1997): Carbon, nitrogen and carbohydrate fluxes during the production of particulate and dissolved organic matter by marine phytoplankton. *Limnology and Oceanography*, 42, 506-518.
- Jenkinson, I. and B. **Biddanda** (1995): Bulk-phase viscoelastic properties of seawater: Relationship with plankton components. *Journal of Plankton Research*, 17, 2251-2274.
- # **Biddanda**, B., S. Opsahl and R. Benner (1994): Plankton respiration and carbon flux through bacterioplankton on the Louisiana Shelf. *Limnology and Oceanography*, 39, 1259-1275.
- # Rajendran, A. and B. **Biddanda** (1994): Regionally variable chemistry, auto-heterotrophic coupling and vertical carbon flux in the northwestern Indian Ocean: a case study for 'Biochemical Pump'. *Indian Journal of Marine Science*, 23, 129-136.
- Abreu, P., B. **Biddanda** and C. Odebrecht (1992): Bacterial dynamics of the Patos Lagoon Estuary, southwestern Brazil (32°S, 52°W); relationship with phytoplankton production and suspended material. *Estuarine, Coastal and Shelf Science*, 35, 621-635.
- Biddanda**, B.A. and F.R. Riemann (1992): The detritus nitrogen problem; examined using cellulose. *P.S.Z.N.I. Marine Ecology*, 13; 271-285.
- Jenkinson, I., B. **Biddanda**, C. Turley., P. Abreu., U. Riebesell and V. Smetacek (1991): Rheological properties of marine organic aggregates: importance for modelling vertical flux, turbulence and microzones. *Oceanologica Acta*, Sp. Vol. No. 11, 101-107.
- Rieper-Kirchner, M., K. Hinz* and B. **Biddanda** (1991): Ingestion of microbially-synthesized organic aggregates and egestion of fecal pellets by marine harpacticoid copepods. *Kieler Meeresforsch., Sonderh.* 8; 257-263.
- Gonzalez, H and B. **Biddanda** (1990): Microbial transformation of metazoan (Isopod, *Idotea granulosa*) faeces. *Marine Biology*, 106; 285-295.
- Hanson, R.B., L.R.Pomeroy., J.O.Blanton., B.A.**Biddanda**., S. Wainright., S.S.Bishop., J.A.Yoder and L.P. Atkinson (1988): Climatological and hydrographic influences on nearshore food webs off the southeastern United States. *Continental Shelf Research*, 8:1321-1344.
- Biddanda**, B.A. (1988): Microbial aggregation and degradation of phytoplankton-derived detritus in sea water. 2. Microbial metabolism. *Marine Ecology Progress Series*, 42; 89-95.
- # **Biddanda**, B.A. and L.R. Pomeroy (1988): Microbial aggregation and degradation of phytoplankton-derived detritus in sea water. 1. Microbial succession. *Marine Ecology Progress Series*, 42; 79-88.
- Biddanda**, B.A. (1986): Structure and function of marine microbial aggregates. *Oceanologica Acta*, 9; 209- 211.

Biddanda, B.A. (1985): Microbial synthesis of macroparticulate matter. *Marine Ecology Progress Series* 20: 241-252. **Best Student Paper Award, Institute of Ecology, U. Georgia 1985.**

Select Non-Peer-reviewed Educational and Outreach Publications (2 recent and 2 ancient):

Connections for the STEM Classroom: In *InterChange* Newsletter of the Regional Math and Science Center, GVSU.

Biddanda, B. A., A. Weinke, R. Ratliff, K. Knapp, M. Villar-Argaiz, P. Carillo and J. Medina Sanchez (2018): A grander view of life. A book review of “Darwin’s Backyard: How small experiments led to a big theory” by James Costa. Norton and Co. 2017.

<https://www.gvsu.edu/rmsc/interchange/2018-april-connections-1351.htm>

Biddanda, B. A., A. Weinke and K. Knapp (2018). Chronicles of hypoxia: GVSU’s time-series observatory tracks hypoxia and ecosystem changes in a Great Lakes estuary.

<https://www.gvsu.edu/rmsc/interchange/2018-february-connections-1327.htm>

Biddanda, B. and N. Horne (April 2015). Freshwater Security in a Changing World.

<http://www.gvsu.edu/rmsc/interchange/2015-april-connections-1019.htm>

Biddanda, B. (August 2011). Sinkholes as windows into Earth’s past - article in *Earth Magazine*

<http://www.earthmagazine.org/article/great-lakes-geologic-sunken-treasure>

Educational video of Sinkhole Exploration (2009): <http://www.youtube.com/watch?v=RmsfykqGkLU>

(d) Recent Synergistic Activities: (Career >60 conference presentations; >30 invited seminars)

- Teaching Graduate and Undergraduate GVSU Courses: Graduate class Bio 580 Advanced Aquatic Ecology (Fall of odd numbered years – Present); Undergraduate class BIO 380 Marine Biology (Fall of even numbered years - Present).
- Provide job shadow opportunities to high school students and guest lectures to K-12 classes.
- Service on Editorial Board: Aquatic Microbial Ecology (2005- present).
- Panel and Review Service: National Science Foundation, Sea Grant, Space Grant and various Science Journals such as *Frontiers*, *Ecosystems*, *Limnology* and *Oceanography*, *Microbial Ecology*..
- Executive Board Member, Michigan Space Grants Consortium, NASA (2011-present).
- Fellow, Cooperative Institute for Great Lakes Research, U. Michigan (2011...).

(e) Collaborators & Other Affiliations

Current Collaborators:

J. Cotner (U. Minnesota); S. Nold (U. Wisconsin-stout); S. Kendall (Muskegon Community College); J. Vail, J. McNair, A. Steinman, R. Rediske (GVSU); G. Dick, T. Johengen and V. Deneff (U. Michigan); D. Dila and V. Klump (U. Wisconsin-Milwaukee); R. Green and J. Bright (Thunder Bay National Marine Sanctuary, NOAA); S. Ruberg and E. J. Anderson (Great Lakes Environmental Research Laboratory, NOAA); M. Villar-Argaiz, J. Medina-Sanchez, P. Carrillo (U. Granada, Spain)

Graduate Advisors and Postdoctoral Sponsors:

Lawrence Pomeroy (Doctoral) – Institute of Ecology, University of Georgia.

Victor Smetacek (Post-doctoral) – Alfred Wegener Institute for Marine & Polar Research, Germany.

Ronald Benner (Post-doctoral) – U Texas Marine Science Inst. (now at University of South Carolina).

James Cotner (Post-doctoral) – Dept. Ecology, Evolution and Behavior, U Minnesota.

Postdoctoral Advisees:

Qianqian Liu (2016-Present); Dirk Koopmans (2015-2016).

Graduate Advisees:

Jasmine Mancusco (2018-present); Katie Knapp (2016-present); Anthony Weinke, GVSU (2014); Leon Gereaux, GVSU (2012-present); Nicole Horne, GVSU (M.S., 2011-present); Deborah Dila, GVSU (M.S., ‘15), Michael Snider (M.S., ‘14); Angela Defore (M.S., ‘13); Garry Sanders (M.S., ‘09)

Current Undergraduate Advisees: Career total number of undergraduate students advised: 41.

Riley Duff (Michigan State University); Kailey-Keenan Whittemore (GVSU)