

Dexter W. Howard

Virginia Tech Department of Biological Sciences

EDUCATION

2021 – Present	Doctor of Philosophy in Biological Sciences (expected 2026) Virginia Polytechnic Institute and State University (Virginia Tech) Advisor: Dr. Cayelan Carey
2016 – 2020	Bachelor of Science in Water: Resources, Policy, and Management Virginia Tech <i>Magna Cum Laude</i> , Minors in Biological Sciences and Environmental Economics

RESEARCH EXPERIENCE

January 2021 – Present	Ph.D. Candidate at Virginia Tech
	<ul style="list-style-type: none"> Dissertation title: Quantifying and predicting the effects of global change on organic carbon in freshwater reservoirs.
May 2020 – August 2020	Water Quality Technician with Carey Lab at Virginia Tech
	<ul style="list-style-type: none"> Implemented and led new sampling and monitoring routine at a drinking water reservoir in Roanoke, VA.
July 2019 – May 2020	Senior Thesis Project at Virginia Tech
	<ul style="list-style-type: none"> Conducted independent senior thesis project looking at dominant time scales of variability and drivers of dissolved organic matter.
October 2016 – May 2020	Undergraduate Research Assistant in Carey Lab at Virginia Tech
	<ul style="list-style-type: none"> Conducted independent project in 2018 looking at organic carbon quality and drivers in local drinking water reservoirs. Helped with field sampling, chemical analyses, and data management.

TEACHING AND MENTORING EXPERIENCE

Fall 2021 - 2025	Graduate Teaching Assistant (GTA) for Freshwater Ecology Lab
	<ul style="list-style-type: none"> Led one lab session of ~18 students and assisted with another of ~18. Led students on field trips and lab activities teaching fundamentals of freshwater ecology sampling and monitoring. Mentored students conducting semester long group projects on local water quality where they collect, analyze, and present their own data. Presented guest lectures on aquatic macroinvertebrates (2024 and 2025) and freshwater microbes (2024). Responsible for all grading related to my lab session and assisted with exam grading for the lecture component of class. 2024 and 2023 nominated for Virginia Tech GTA award.
2021 – 2025	Mentor for Undergraduate students in Carey Lab
	<ul style="list-style-type: none"> Mentored or co-mentored 6 undergraduate students. Trained students on lab tasks including field preparation, field sampling, data management, and acid washing. Helped students with professional development including CV development, job and graduate school applications, and serving as a reference for applications.
2022	Invited Guest Lecture on Water Quality
	<ul style="list-style-type: none"> I was a guest lecturer on water quality in three sessions of Principles of Biology Lab (BIOL 1106) at Virginia Tech. 26 April 2022.

PUBLICATIONS

- In revision* Lewis, A., D. Richardson, **D.W. Howard**, C.C. Carey, B. Kraemer, Y. Amitai, S. Bansal, E. De Eyo, H.P. Grossart, K. Hoffman, R. Hovel, L. Knoll, I. Oleksy, M. Schmid, R. Schwefel, D. Straile, X. Sun, G. Weyhenmeyer, W. Woelmer, S. Wollrab, P. Znachor. How should we analyze seasons and seasonality in lakes? In revision at *L&O Letters*
- In review* Lofton, M., R.Q. Thomas, F. Olsson, A. Neog, S. Fatemi, A. Karpatne, A. Breef-Pilz, **D. Howard**, H. Wander, C. Carey. The importance of a multi-model ensemble for predicting variable ecological time series across dynamic conditions. In review at *Ecological Applications*. Pre-print available at: <https://essopenarchive.org/doi/full/10.22541/essoar.174785900.05100209>
- 2026 **Howard, D.W.**, M.E. Lofton, R.Q. Thomas, A.D. Delany, A. Breef-Pilz, C.C. Carey. Near-term forecasts of dissolved organic matter exhibit consistent patterns of accuracy across multiple freshwater reservoirs. *JGR Biogeosciences*. doi:10.1029/2025JG009064
- Hounshell, A.G., A.S.L. Lewis, **D.W. Howard**, H.L. Wander, M.E. Lofton, P.C. Hanson, C.C. Carey. Dissolved organic carbon dynamics are driven by water temperature, primary production, and anoxia over 5 years of whole-ecosystem experiments in a eutrophic reservoir. *Aquatic Sciences*. doi:10.1007/s00027-025-01252-5
- 2025 Wander, H.L., M.E. Lofton, J.P. Doubek, **D.W. Howard**, M.R. Hipsey, R.Q. Thomas, C.C. Carey. Warming air temperatures alter the timing and magnitude of reservoir zooplankton biomass. *Ecological Modeling*. doi:10.1016/j.ecolmodel.2025.111272
- 2024 Ming, C.L., A. Breef-Pilz, **D.W. Howard**, M.E. Schreiber. Geochemical drivers of manganese removal in drinking water reservoirs under hypolimnetic oxygenation. *Applied Geochemistry*. doi:10.1016/j.apgeochem.2024.106120
- Howard, D.W.**, J.A. Brentrup, D.C. Richardson, A.S.L. Lewis, F. Olsson, C.C. Carey. Variability in ice cover does not affect annual metabolism estimates in a small eutrophic reservoir. *JGR Biogeosciences*. doi:10.1029/2024JG008057
- Wander, H.L., A.S.L. Lewis, **D.W. Howard**, W.M. Woelmer, B.L. Brown, M. Lofton, C.C. Carey. Zooplankton exhibit multiple diel migration strategies and substantial interannual changes in community structure in a eutrophic reservoir. *Journal of Plankton Research*. doi:10.1093/plankt/fbae017
- Lewis, A.S.L., A. Breef-Pilz, **D.W. Howard**, M.E. Lofton, F. Olsson, H.L. Wander, C.E. Wood, M.E. Schreiber, C.C. Carey. Reservoir Drawdown Highlights the Emergent Effects of Water Level Change on Reservoir Physics, Chemistry, and Biology. *JGR Biogeosciences*. doi:10.1029/2023JG007780
- Lewis, A.S.L., M.P. Lau, S.F. Jane, K.C. Rose, Y. Be'eri-Shlevin, S.H. Burnet, F. Clayer, O. Erina, H. Feuchtmayr, H.P. Grossart, **D.W. Howard**, H. Mariash, J. D. Martin, R.L. North, I. Oleksy, R.M. Pilla, A.P. Smagula, R. Sommaruga, S.E. Steiner, P. Verburg, D. Wain, G.A. Weyhenmeyer, C.C. Carey. Anoxia Begets

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- Anoxia: a positive feedback to the deoxygenation of temperate lakes. *Global Change Biology*. doi:10.1111/gcb.17046
- 2023 Lewis, A.S.L, **D.W. Howard**, G. Koren, C. Kowalski, J. McLachlan, J.A. Peters, O. Tabares, G. Smies. Ethics in forecasting: a case-based learning set. *Teaching Issues and Experiments in Ecology*. https://tiee.esa.org/vol/v19/issues/case_studies/lewis/abstract.html, teaching resources additionally hosted at QUBES Educational Resources. doi:10.25334/5D99-Y019
- Lofton, M.E., **D.W. Howard**, R.Q. Thomas, C.C. Carey. Progress and opportunities in advancing near-term forecasting of freshwater quality. *Global Change Biology*. doi:10.1111/gcb.16590
- 2022 Lofton, M.E., **D.W. Howard**, R.P. McClure, H.L. Wander, W.M. Woelmer, A.G. Hounshell, A.S.L. Lewis, C.C. Carey. Experimental thermocline deepening alters vertical distribution and community structure of phytoplankton in a four-year whole-reservoir manipulation. *Freshwater Biology*. doi:10.1111/fwb.13983
- Lewis, A. S. L., W.M. Woelmer, H.L. Wander, **D.W. Howard**, J.W. Smith, R.P. McClure, M.E. Lofton, N.W. Hammond, R.S. Corrigan, R.Q. Thomas, C.C. Carey. Increased adoption of best practices in ecological forecasting enables comparisons of forecastability. *Ecological Applications*. doi:10.1002/eap.2500
- Carey, C.C., W.M. Woelmer, M.E. Lofton, R.J. Figueiredo, B.J. Bookout, R.S. Corrigan, V. Daneshmand, A.G. Hounshell, **D.W. Howard**, A.S.L. Lewis, R.P. McClure, H.L. Wander, N.K. Ward, R.Q. Thomas. Advancing lake and reservoir water quality management with near-term, iterative ecological forecasting. *Inland Waters* doi:10.1080/20442041.2020.1816421
- 2021 **Howard, D.W.**, A.G. Hounshell, M.E. Lofton, W.M. Woelmer, P.C. Hanson, C.C. Carey. Variability in fluorescent dissolved organic matter concentrations across diel to seasonal time scales is driven by water temperature and meteorology in a eutrophic reservoir. *Aquatic Sciences*. doi:10.1007/s00027-021-00784-w

GRANTS, SCHOLARSHIPS, and HONORS (\$46,760 total raised)

- 2025 Virginia Tech GPSS Travel Fund Program Recipient (\$300)
- 2025 Virginia Tech Graduate School Doctoral Assistantship Fellowship (\$12,160)
- 2025 Virginia Tech Noel Krieg Graduate Fellowship (\$1,850)
- 2024 Virginia Tech GPSS Travel Fund Program Recipient (\$300)
- 2024 Virginia Tech College of Science Jean Ann Russe Skiles, PhD '87 Graduate Fellowship (\$8,000)
- 2024 Mary and George Schaeffer Stream Team Excellence Award (\$1,000)
- 2022 GLEON Student Travel Award (\$900)
- 2022 Leo Bourassa Virginia Lakes and Watershed Association Scholarship (\$1,500)
- 2022 NSF Graduate Research Fellowship Program (GRFP) Honorable Mention
- 2021 Virginia Water Resources Research Center Student Competitive Grant (\$5,000)

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- 2021 Leo Bourassa Virginia Lakes and Watershed Association Scholarship (\$1,000)
 2019 Stephen H. Schoenholtz Water Undergraduate Research Fund (\$3,000)
 2019 Virginia Tech Global Change Center Undergraduate Research Grant (\$1,000)
 2019 Leo Bourassa Virginia Lakes and Watershed Association Scholarship (\$1,000)
 2019 Peter P. Feret Memorial Scholarship (\$1,750)
 2018 Virginia Tech Global Change Center Undergraduate Research Grant (\$1,000)
 2016 American Disposal Services Inc. Scholarship (\$2,500)
 2016 Old Dominion Land Conservancy Scholarship (\$2,000)
 2016 Loudoun Fair & Associates Inc. Scholarship (\$1,500)
 2016 Virginia Trade Partner Council Scholarship (\$1,000)

FELLOWSHIPS

- 2022 – **Western Virginia Water Authority (WVWA) Graduate Fellowship**
 2025 Served as the WVWA graduate fellow for the Reservoir Group at Virginia Tech while a graduate student in the Carey Lab. I served as a liaison between the Reservoir Group and WVWA to help facilitate field work, data collection, and project report backs to help inform water management at WVWA owned reservoirs.
- 2022 - **GLEON Lake Expedition 2022 Fellowship Program**
 2024 Selected as a graduate student fellow to work with an interdisciplinary team of scientists for 1.5 years on a project using hyperspectral remote sensing data to infer ecosystem processes ranging from microbial community composition to metabolism rates. This project is supported by NASA to help advance their Surface Biology and Geology (SBG) mission.
- 2022 - **Interfaces of Global Change Fellow – VT Global Change Center**
 Present Selected as a graduate student fellow to participate in a graduate curriculum to gain breadth in the multifaceted realm of global change and the science-policy interface.

PUBLISHED DATA PRODUCTS

For annually revised datasets, the most recent citation is presented, and the years of previous co-authored revisions are listed to the left.

- 2026 **Howard, D.W.**, A.G. Hounshell, A. Breef-Pilz, K.A. Peeler, D.T. Scott, and C.C. Carey. 2026. Time series of optical measurements (absorbance, fluorescence) for Beaverdam Reservoir, Carvins Cove Reservoir, and Falling Creek Reservoir in southwestern Virginia, USA 2019-2025 ver 2. Environmental Data Initiative.
<https://doi.org/10.6073/pasta/0355e1d79ba59fd3e910e676b899dcb8>
- 2026 **Howard, D.W.**, K.A. Peeler, A. Breef-Pilz, D.T. Scott, and C.C. Carey. 2026. Time series of stable water isotopes ($d^{18}\text{O}$, $d^2\text{H}$) from Carvins Cove Reservoir in Southwestern Virginia, USA 2024-2025 ver 1. Environmental Data Initiative.
<https://doi.org/10.6073/pasta/aa2f7e49fb18519fee53585dd5596937>
- 2026 Carey, C.C., A. Breef-Pilz, A.E. Bateman, and **D.W. Howard**. 2026. Manually-collected discharge data for multiple inflow and outflow tributaries at Falling Creek Reservoir, Beaverdam Reservoir, and Carvins Cove Reservoir, Virginia, USA from 2019-2025 ver 9. Environmental Data Initiative.
<https://doi.org/10.6073/pasta/73a63480443d39bcac19ed0bae2aa214>

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- 2025 Carey, C.C., **D.W. Howard**, K.K. Hoffman, M. Popescu, A. Breef-Pilz, and F.M. Iannucci. 2025. Water chemistry time series for Beaverdam Reservoir, Carvins Cove Reservoir, Falling Creek Reservoir, Gatewood Reservoir, and Spring Hollow Reservoir in southwestern Virginia, USA 2013-2024 ver 13. Environmental Data Initiative. <https://doi.org/10.6073/pasta/39db9e3463ae02d9e756e258ff5afb0e>
- 2025 Schreiber, M.E., C.E. Bauer, C.E. Wood, A. Breef-Pilz, N.W. Hammond, F. Iannuci, W.M. Woelmer, **D.W. Howard**, H.L. Wander, and B.R. Niederlehner. 2025. Time series of total metal and nutrient loads into Falling Creek Reservoir in southwestern Virginia, USA from 2019-2024 ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/5a77855d308043f20f953d258b570fb7>
- 2025 Carey, C.C., A. Breef-Pilz, K.K. Hoffman, **D.W. Howard**, S. Kenny, E. Tipper, and S. Tannheiser. 2025. Filtered chlorophyll a time series for Beaverdam Reservoir, Carvins Cove Reservoir, Claytor Lake, Falling Creek Reservoir, Gatewood Reservoir, Smith Mountain Lake, Spring Hollow Reservoir in southwestern Virginia, and Lake Sunapee in Sunapee, New Hampshire, USA during 2014-2024 ver 5. Environmental Data Initiative. <https://doi.org/10.6073/pasta/7cc4e7541c75738e5c4d6bb948c2df8e>
- 2025 Carey, C.C., A. Breef-Pilz, and **D.W. Howard**. 2025. Time series of high-frequency sensor data measuring water temperature, dissolved oxygen, conductivity, specific conductance, total dissolved solids, chlorophyll a, phycocyanin, and fluorescent dissolved organic matter at discrete depths in Carvins Cove Reservoir, Virginia, USA in 2020-2024 ver 3. Environmental Data Initiative. <https://doi.org/10.6073/pasta/7e0e3a32771e9002f0f3dcaa08e4e28f>
- 2025 Carey, C.C., A. Breef-Pilz, H.L. Wander, **D.W. Howard**, G.K. Haynie, M.K. Kricheldorf, S. Tannheiser, and E.M. Tipper. 2025. Secchi depth data and discrete depth profiles of water temperature, dissolved oxygen, conductivity, specific conductance, photosynthetic active radiation, oxidation-reduction potential, and pH for Beaverdam Reservoir, Carvins Cove Reservoir, Falling Creek Reservoir, Gatewood Reservoir, and Spring Hollow Reservoir in southwestern Virginia, USA 2013-2024 ver 13. Environmental Data Initiative. <https://doi.org/10.6073/pasta/0df2b12c947e52a8d0240a75d20bbc1e>
- 2024 Carey, C.C., A. Breef-Pilz, **D.W. Howard**, and A.D. Delany. 2024. Time series of high-frequency meteorological data at Carvins Cove Reservoir, Virginia, USA 2021-2023 ver 2. Environmental Data Initiative. <https://doi.org/10.6073/pasta/8101e224a95adcae1a938855f198ec34>
- 2024 McAfee, B.J., M.E. Lofton, A. Breef-Pilz, K.J. Goodman, R.T. Hensley, K.K. Hoffman, **D.W. Howard**, A.S. Lewis, D.M. McKnight, I.A. Oleksy, H.L. Wander, C.C. Carey, A. Karpatne, and P.C. Hanson. 2024. LakeBeD-US: Ecology Edition - a benchmark dataset of lake water quality time series and vertical profiles ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/c56a204a65483790f6277de4896d7140>
- 2023 Lewis, A.S., M.P. Lau, S.F. Jane, Y. Beeri-Shlevin, S.H. Burnet, F. Clayer, H. Feuchtmayr, H. Grossart, **D.W. Howard**, H. Mariash, J. Delgado-Martin, R.L. North, I. Oleksy, R.M. Pilla, K.C. Rose, A.P. Smagula, R. Sommaruga, S.E. Steiner, P.

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- Verburg, D. Wain, G.A. Weyhenmeyer, and C.C. Carey. 2023. Dissolved oxygen, temperature, chlorophyll-a, total phosphorus, total nitrogen, and dissolved organic carbon at multiple depths in 822 lakes from 1921-2022 ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/2cd6628a942de2a8b12d2b19962712a0>
- 2023 Carey, C.C., **D.W. Howard**, P.A. Gantzer, R.P. McClure, A.B. Gerling, M.E. Lofton, A. Breef-Pilz, and WVWA. 2023. Time series of high-frequency sensors measuring water temperature and dissolved oxygen at discrete depths in Falling Creek Reservoir, Virginia, USA in 2012-2018 ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/964a5bbbb4d5826b5acb30098dbae59a>
- 2023 Lofton, M.E., **D.W. Howard**, R. Thomas, and C.C. Carey. 2023. State-of-the-art review of near-term freshwater forecasting literature published between 2017 and 2022 ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/949164a64de132ff3bbb7b92d2e1c729>
- 2022 Carey, C.C., A.S. Lewis, **D.W. Howard**, W.M. Woelmer, P.A. Gantzer, K.A. Bierlein, J.C. Little, and WVWA. 2022. Bathymetry and watershed area for Falling Creek Reservoir, Beaverdam Reservoir, and Carvins Cove Reservoir ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/352735344150f7e77d2bc18b69a22412>
- 2021 Lofton, M.E., **D.W. Howard**, R.P. McClure, H.L. Wander, W.M. Woelmer, A.G. Hounshell, A.S. Lewis, and C.C. Carey. 2021. Time series of phytoplankton biovolume at the depth of the vertical chlorophyll maximum in Falling Creek Reservoir, Vinton, VA, USA 2016-2019 ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/2de760e8b72e474c31e42526f5360f9a>
- 2021 Lewis, A.S., W.M. Woelmer, H.L. Wander, **D.W. Howard**, J.W. Smith, R.P. McClure, M.E. Lofton, N.W. Hammond, R.S. Corrigan, R.Q. Thomas, and C.C. Carey. 2021. Systematic review of near-term ecological forecasting literature published between 1932 and 2020 ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/c4bea94f100f39a6b73c7b9a577df214>
- 2021 Carey, C.C., A.S. Lewis, R.P. McClure, A.B. Gerling, S. Chen, A. Das, J.P. Doubek, **D.W. Howard**, M.E. Lofton, K.D. Hamre, and H.L. Wander. 2021. Time series of high-frequency profiles of depth, temperature, dissolved oxygen, conductivity, specific conductivity, chlorophyll a, turbidity, pH, oxidation-reduction potential, photosynthetic active radiation, and descent rate for Beaverdam Reservoir, Carvins Cove Reservoir, Falling Creek Reservoir, Gatewood Reservoir, and Spring Hollow Reservoir in Southwestern Virginia, USA 2013-2020 ver 11. Environmental Data Initiative. <https://doi.org/10.6073/pasta/5448f9d415fd09e0090a46b9d4020ccc>
- 2021 Carey, C.C., W.M. Woelmer, A.S. Lewis, A. Breef-Pilz, **D.W. Howard**, and B.J. Bookout. 2021. Time series of high-frequency sensor data measuring water temperature, dissolved oxygen, pressure, conductivity, specific conductance, total dissolved solids, chlorophyll a, phycocyanin, and fluorescent dissolved organic matter at discrete depths in Falling Creek Reservoir, Virginia, USA in 2018-2020 ver 5. Environmental Data Initiative. <https://doi.org/10.6073/pasta/88896f4a7208c9b7bddcf498258edf78>

PRESENTATIONS (Underlined name refers to presenter; *refers to mentored student)

- 2025 **Howard, D.W.**, A. Breef-Pilz, W.M. Woelmer, D. Scott, C.C. Carey. Changes in Dissolved Organic Matter Composition across the Lotic to Lentic Boundary in a Reservoir Longitudinal Gradient. Oral presentation at: American Geophysical Union (AGU) 2025 meeting. New Orleans, LA. December 2025.
- Lofton, M., R.Q. Thomas, A. Neog, S. Fatemi, A. Karpatne, A. Breef-Pilz, A. Delany, **D. Howard**, H. Wander, P. Hanson, C. Carey. Multiple models improve the prediction of highly variable ecological time series: lessons learned from comparing eighteen models to predict freshwater phytoplankton. Oral presentation at: *Ecological Society of America (ESA) 2025*. Baltimore, Maryland. August 2025.
- Popescu, M., M.E. Lofton, A. Breef-Pilz, C.E. Bauer, K.K. Hoffman, **D.W. Howard**, H.L. Wander, C.E. Wood, C.C. Carey. Ten years of monitoring data reveal a persistent deep-water phytoplankton bloom driven by water level, light availability, and nutrients in a temperate, eutrophic reservoir. Poster presentation at: *Ecological Society of America (ESA) 2025*. Baltimore, Maryland. August 2025.
- Howard, D.W.**, A. Breef-Pilz, W.M. Woelmer, D. Scott, C.C. Carey. Changes in reservoir dissolved organic matter composition between lotic and lentic sites across a longitudinal gradient. Oral presentation at: 2025 Virginia Tech Interface of Global Change Graduate Research Symposium. Blacksburg, VA. April 2025.
- 2024 **Howard, D.W.**, A. Breef-Pilz, A. Delany, M. Lofton, R.Q. Thomas, C. Carey. High Forecast Skill of Dissolved Organic Matter Concentration in Drinking Water Reservoirs. Poster presentation at: American Geophysical Union (AGU) 2024 meeting. Washington D.C. December 2024.
- Howard, D.W.**, A. Breef-Pilz, A. Delany, M. Lofton, R.Q. Thomas, C. Carey. Forecast skill of dissolved organic matter concentrations decreases during stratified conditions. Oral presentation at: Association for the Society of Limnology and Oceanography 2024 meeting. Madison, Wisconsin. June 2024.
- 2023 Currier, B., M. Glines, A. Gorsky, E. Hall, **D. Howard**, L. Jansen, C.H. Owens, A. Schmidt, S. Sharp, B. Poulter, S. Uz, P. Hanson, K. Weathers. Uniting remotely sensed and in situ data records to understand seasonal dynamics of lake metabolism: a GLEON-NASA collaboration. Poster presentation at: AGU 2023. San Francisco, California. December 2023.
- Howard, D.W.**, W.M. Woelmer, A. Breef-Pilz, D. Scott, C.C. Carey. Spatiotemporal changes in dissolved organic matter across a reservoir watershed. Poster presentation at: *Ecological Society of America (ESA) 2023*. Portland, Oregon. August 2023.
- Wander, H.L., A. Lewis, **D. Howard**, W.M. Woelmer, B.L. Brown, C.C. Carey. High variability in zooplankton community structure across space and time in an anoxic reservoir due to changing patterns of migration behavior. Oral presentation at: *ESA 2023*. Portland, Oregon. August 2023.
- Keverline, R.L.*, M.K. Kricheldorf*, E.M. Tipper*, A. Breef-Pilz, **D.W. Howard**, C.C. Carey. Establishing standard operating procedures for bathymetric mapping of

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- small freshwater reservoirs. Poster presentation at: 2023 Summer Research Symposium at Virginia Tech. July 2023
- Lofton, M.E., D.W. Howard, R.Q. Thomas, C.C. Carey. Progress and opportunities in advancing near-term forecasting of freshwater quality. Oral presentation at: Hacking Limnology 2023 Virtual Summit and Workshops. July 2023.
- Howard, D.W., A.D. Gray, C.C. Carey. Changes in lake pharmaceutical and personal care product concentrations after a large swimming event. Poster presentation at: *Lake Sunapee Protective Association Symposium*. Sunapee, New Hampshire. May 2023.
- Howard, D.W., A.D. Gray, A. Breef-Pilz, D. Scott, C.C. Carey. Improving reservoir monitoring of organic compounds through high frequency sensors and manual sampling. Oral presentation at: *Virginia Water Conference*. Richmond, Virginia. March 2023.
- 2022 Howard, D.W., J.A. Brentrup, D.C. Richardson, A.S.L. Lewis, F. Olsson, C.C. Carey. The effect of variable winter dynamics on metabolism rates in a eutrophic reservoir over six years. Poster presentation at: *GLEON 2022*. Lake George, New York. November 2022.
- Lewis, A. S. L., W.M. Woelmer, H.L. Wander, **D.W. Howard**, J.W. Smith, R.P. McClure, M.E. Lofton, N.W. Hammond, R.S. Corrigan, R.Q. Thomas, C.C. Carey. Near-term Ecological Forecasting: State of the Field. Oral Presentation (virtual) at: *INTECOL 2022*. Geneva, Switzerland. August 2022.
- Howard, D.W., J.A. Brentrup, D.C. Richardson, A.S.L. Lewis, C.C. Carey. The Influence of Winter Dynamics on Annual Metabolism Rates in a Eutrophic Reservoir Over Six Years. Oral presentation at: *Joint Aquatic Sciences Meeting (JASM)*. Grand Rapids, Michigan. May 2022.
- Howard, D.W., A.D Gray, C.C. Carey. Effects of a large swimming event in a drinking water reservoir. Oral presentation at: *Virginia Water Conference*. Richmond, Virginia. March 2022.
- 2021 Howard, D.W., J.A. Brentrup, D.C. Richardson, A.S.L. Lewis, C.C. Carey. The influence of winter dynamics on annual metabolism rates in a eutrophic reservoir over multiple years. Poster presentation (Virtual) at: *Global Lakes Ecological Observatory Network (GLEON) Conference, 2021*.
- Howard, D.W., J.A. Brentrup, D.C. Richardson, A.S.L. Lewis, C.C. Carey. The influence of winter dynamics on annual metabolism rates in a eutrophic reservoir over multiple years. Poster presentation (Virtual) at: Association for the Society of Limnology and Oceanography 2021 meeting.
- Lofton, M.E., D.W. Howard, R.P. McClure, H.L. Wander, W.M. Woelmer, A.G. Hounshell, A.S.L. Lewis, C.C. Carey. Whole-ecosystem experiments reveal that thermocline deepening shifts the peak biomass depth and community structure of phytoplankton in a eutrophic reservoir. Oral presentation (Virtual) at: Association for the Society of Limnology and Oceanography 2021 meeting.

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- 2020 **Carey, C.C.**, W.M. Woelmer, M.E. Lofton, R.J. Figueiredo, B.J. Bookout, R.S. Corrigan, V. Daneshmand, A.G. Hounshell, **D.W. Howard**, A.S.L. Lewis, R.P. McClure, H.L. Wander, N.K. Ward, R.Q. Thomas (2020). Advancing lake and reservoir water quality management with near-term, iterative ecological forecasting. Poster Presentation (Virtual): *The Ecological Society of America 2020 Annual Meeting*.
- Howard, D.W.**, M.E. Lofton, A.G. Hounshell, W.M. Woelmer, C.C. Carey (2020). Variability in fluorescent dissolved organic matter concentrations and periodicity across diel to seasonal time scales over a year in a eutrophic reservoir. Oral Presentation (Virtual): *Undergraduate Senior Thesis Presentation*.
- Howard, D.W.**, M.E. Lofton, A.G. Hounshell, C.C. Carey (2020). Drivers of dissolved organic matter vary across multiple time scales in a drinking water reservoir. Oral presentation (Virtual): *2020 Dennis Dean Undergraduate Research Conference*.
- Howard, D.W.**, M.E. Lofton, A.G. Hounshell, R.P. McClure, W.M. Woelmer, C.C. Carey (2020). Drivers of dissolved organic matter vary across multiple time scales in a drinking water reservoir. Oral presentation at: *Virginia Water Conference*. Richmond, Virginia.
- 2019 **Howard, D.W.**, M.E. Lofton, A.G. Hounshell, B.J. Bookout, R.P. McClure, and C.C. Carey (2019). Drivers and patterns of dissolved organic matter fluorescence at diel to seasonal time scales in a drinking water reservoir. Poster presented at: *21st Global Lakes Ecological Observatory Network (GLEON) Conference*. Huntsville, Ontario.
- Howard, D.W.**, M.E. Lofton, R.P. McClure, B.R. Niederlehner, and C.C. Carey (2019). Identifying the drivers of organic carbon in drinking water reservoirs to improve water quality. Poster presented at: *2019 Dennis Dean Undergraduate Research Conference*. Blacksburg, Virginia.
- Howard, D.W.**, M.E. Lofton, R.P. McClure, B.R. Niederlehner, and C.C. Carey (2019). Identifying the drivers of organic carbon in drinking water reservoirs to improve water quality. Poster presented at: *Western Virginia Water Authority Project Report Back*. Roanoke, Virginia.

SERVICE and OUTREACH

Cultural Awareness Course Development: Developed a self-paced online course with collaborators from the Virginia Tech Indigenous Community Center and Global Change Center on 'Building Cultural Awareness: Native American Identity' for the Virginia Tech community as part of my VT IGC Capstone project.

Peer reviewer, Journal of Hydrology, JGR: Biogeosciences, ES&T Water

Panelist, Virginia Tech Biological Sciences Graduate Introductory Seminar "Being a graduate student: challenges and opportunities" (Fall 2025)

Exhibitor, Virginia Tech Science Festival Stream Team exhibit, (Fall 2022, Fall 2024)

Reviewer and Panelist, Guest panelist or reviewer for Virginia Tech NSF GRFP prep class, (Fall 2022, Fall 2024)

Activity table monitor, SEEDS Nature Center (Summer 2021, Spring 2022)

Travel Fund Reviewer, Reviewed travel fund applications for Virginia Tech Graduate and Professional Student Senate (September 2022, November 2024)

PROFESSIONAL ORGANIZATIONS

Global Lake Ecological Observatory Network (GLEON)

Association for the Sciences of Limnology and Oceanography (ASLO)

American Geophysical Union (AGU)

Virginia Lakes and Watershed Associations (VLWA)