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** *Magna Cum Laude*, Minors in Biological Sciences and Environmental Economics

RESEARCH EXPERIENCE

January 2021 – Present	**Ph.D. Candidate at Virginia Tech** • 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** • 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** • 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** • 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** • 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. • 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 Graduate TA award.
2021 – 2025	**Mentor for Undergraduate students in Carey Lab** • Mentored or co-mentored 6 undergraduate students since Fall 2021 • Helped train 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.

PUBLICATIONS

In revision	Lewis, A., D. Richardson, **D.W. Howard**, C.C. Carey, Y. Amitai, S. Bansal, E. De Eyto, H.P. Grossart, K. Hoffman, R. Hovel, L. Knoll, B. Kraemer, 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*

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. In revision at *JGR Biogeosciences.* Pre-print available at: https://essopenarchive.org/doi/full/10.22541/essoar.174715172.29580093

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 five years of whole-ecosystem experiments in a eutrophic reservoir. In review at *Aquatic Sciences*

In review	Schmidt, A.G., L. Jansen, B. Currinder, M. Glines, A. Gorsky, E. Hall, **D. Howard**, C. Owens, S. Sharp, S. Schollaert Uz, P.C. Hanson, K.C. Weathers. Detecting Lake Ecosystem Dynamics using Remote Sensing and In Situ Data: Pitfalls and Promise. In review at *Ecosystems*

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

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.SL., 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 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)

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 –
2025   **Western Virginia Water Authority (WVWA) Graduate Fellowship**
Served as the WVWA graduate fellow for the Reservoir Group at Virginia 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 -
2024   **GLEON Lake Expedition 2022 Fellowship Program**
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 -
Present   **Interfaces of Global Change Fellow – VT Global Change Center**
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

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

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

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

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

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

Carey, C.C., A. Breef-Pilz, **D.W. Howard**, and C.E. Bauer. 2025. Manually-collected discharge data for multiple inflow and outflow tributaries at Falling Creek Reservoir, Beaverdam Reservoir, and Carvins Cove Reservoir, Virginia, USA from 2019-2024 ver 8. Environmental Data Initiative. https://doi.org/10.6073/pasta/a4289f0a0ae95385c68973e583a2a2f6

2024   Carey, C.C., **D.W. Howard**, K.K. Hoffman, H.L. Wander, A. Breef-Pilz, B.R. Niederlehner, G. Haynie, R. Keverline, M. Kricheldorf, and E. Tipper. 2024. Water chemistry time series for Beaverdam Reservoir, Carvins Cove Reservoir, Falling Creek Reservoir, Gatewood Reservoir, and Spring Hollow Reservoir in southwestern Virginia, USA 2013-2023 ver 12. Environmental Data Initiative. https://doi.org/10.6073/pasta/7d7fdc5081ed5211651f86862e8b2b1e

Carey, C.C., A. Breef-Pilz, **D.W. Howard**, and A.D. Delany. 2024. 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 2020-2023 ver 2. Environmental Data Initiative. https://doi.org/10.6073/pasta/5995542a893c73583a65f511463410cf

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

Carey, C.C., A. Breef-Pilz, and **D.W. Howard**. 2024. Manually-collected discharge data for multiple inflow tributaries entering Falling Creek Reservoir, Beaverdam Reservoir, and Carvins Cove Reservoir, Virginia, USA from 2019-2023 ver 7. Environmental Data Initiative. https://doi.org/10.6073/pasta/805eb3da2e714f249793d0ff2f11d8f1

2023 Carey, C.C., H.L. Wander, **D.W. Howard**, A. Breef-Pilz, and B.R. Niederlehner. 2023. Water chemistry time series for Beaverdam Reservoir, Carvins Cove Reservoir, Falling Creek Reservoir, Gatewood Reservoir, and Spring Hollow Reservoir in southwestern Virginia, USA 2013-2022 ver 11. Environmental Data Initiative. https://doi.org/10.6073/pasta/457120a9de886a1470c22a01d808ab2d

Carey, C.C., A. Breef-Pilz, W.M. Woelmer, **D.W. Howard**, B.R. Niederlehner, B.D. Geisler, A.R. Das, and G. Haynie. 2023. 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 2014-2022 ver 3. Environmental Data Initiative. https://doi.org/10.6073/pasta/88171603d5f6972ac52f00a08dfc2f28

Carey, C.C., A. Breef-Pilz, **D.W. Howard**, W.M. Woelmer, B. Geisler, and G. Haynie. 2023. Manually-collected discharge data for multiple inflow tributaries entering Falling Creek Reservoir, Beaverdam Reservoir, and Carvins Cove Reservoir, Virginia, USA from 2019-2022 ver 6. Environmental Data Initiative. https://doi.org/10.6073/pasta/dd75aba9ea4a87904091c49b77795588

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

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

Carey, C.C., H.L. Wander, **D.W. Howard**, B.R. Niederlehner, W.M. Woelmer, M.E. Lofton, A.B. Gerling, and A. Breef-Pilz. 2022. Water chemistry time series for Beaverdam Reservoir, Carvins Cove Reservoir, Falling Creek Reservoir, Gatewood Reservoir, and Spring Hollow Reservoir in southwestern Virginia, USA 2013-2021 ver 10. Environmental Data Initiative. https://doi.org/10.6073/pasta/7bd797155cdbb5f1acdf0547c6ba9023

Carey, C.C., A. Breef-Pilz, and **D.W. Howard**. 2022. Time series of high-frequency meteorological data at Carvins Cove Reservoir, Virginia, USA 2021 ver 1. Environmental Data Initiative. https://doi.org/10.6073/pasta/244549a10f571df6bd412ea612295ed7

Carey, C.C., A. Breef-Pilz, and **D.W. Howard**. 2022. 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 Carvins Cove Reservoir, Virginia, USA in 2021 ver 1. Environmental Data Initiative. https://doi.org/10.6073/pasta/0d9660ac0fcd510bc6a424aeeef29998

Carey, C.C., A. Breef-Pilz, **D.W. Howard**, W.M. Woelmer, and A.G. Hounshell. 2022. Manually-collected discharge data for multiple inflow tributaries entering Falling Creek Reservoir, Beaverdam Reservoir, and Carvins Cove Reservoir, Vinton and Roanoke, Virginia, USA from 2019-2021 ver 5. Environmental Data Initiative. https://doi.org/10.6073/pasta/9992f38175e38a03ce5aa794eefec857

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

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

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

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   <u>Lofton, M.</u>, 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.

<u>Popescu, M.</u>, 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 Currinder, 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 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. Guest lecture on water quality in three sessions of Principles of Biology Lab (BIOL 1106) at Virginia Tech. 26 April 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.

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

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)

Ecological Society of America (ESA)