Elizabeth Myers Toman, Ph.D., Engineering Intern
toman.11@osu.edu

EDUCATION

Oregon State University**,** Corvallis, Oregon 2007
Ph.D. (dual degree) in Forest Engineering and Civil Engineering
Dissertation: Reducing Sediment Production from Forest Roads during Wet-Weather Use

Oregon State University, Corvallis, Oregon 2004
M.S. in Forest Hydrology
Thesis: Forest Road Hydrology: The Influence of Forest Roads on Stream Flow at Stream Crossings

Utah State University, Logan, Utah 1999
B.S. in Environmental Studies, Minor: Botany

RELATED EXPERIENCE

Assistant Professor of Professional Practice, The Ohio State University, Columbus, Ohio Aug 2021 to current
School of Environment and Natural Resources

Visiting Assistant Professor/Lecturer, The Ohio State University, Columbus, Ohio 2012 – 2021
School of Environment and Natural Resources

Faculty Lecturer, The Ohio State University, Columbus, Ohio 2009 – 2011
School of Environment and Natural Resources
Department of Civil, Environmental, and Geodetic Engineering

Watershed Coordinator, Rocky Fork Creek Watershed Protection Task Force, Gahanna, Ohio 2009 – 2011

Graduate Research Assistant, Oregon State University, Corvallis, Oregon 2001 – 2007

Field Assistant, Aquatic Biodiversity, Utah State University, Logan, Utah 1999

Laboratory Technician, Microbiology Laboratory, Utah State University, Logan, Utah 1998 – 1999

Field Assistant, Luquillo LTER Experimental Forest, Puerto Rico 1998

GRANTS DEVELOPED AND FUNDED

Toman, E.M. and K. Zhao. "Stream & Wetland Mitigation Forecasting: Developing a Predictive Model for Faster Project Delivery and Cost-Savings." Ohio Department of Transportation. Awarded June 2020. ($212,786)

Allen, T. and **E.M. Toman.** "Effect of Invasive Amur Honeysuckle (L maacki) on Aquatic Macroinvertebrate Density & Diversity." Ohio Agricultural Research and Development Center; SEEDS Undergraduate Research Enhancement Grant program. Awarded January 2020. ($3,300).

DeJong, L. and **E.M. Toman.** "Impacts of Amur Honeysuckle (Lonicera maackii) Removal on Avian Assemblage Composition." Ohio Agricultural Research and Development Center; SEEDS Graduate Research Enhancement Grant program. Awarded March 2019. ($5,000).

Toman, E.M. and K. Zhao. "Landscape fragmentation and water yield with unconventional shale oil and gas development in Ohio." USGS 104(b): Ohio Water Resources Center. Awarded January 2018. ($35,008).

Daniels, J.J., N.T. Basta, J.M. Bielicki, D.R. Cole, A.E. Cook, T.H. Darrah, R.P. Lanno, K.E. Martin, P. Mouser, S. Prakash, F.W. Schwartz, **E.M. Toman**, M.J. Wilkins, B.A. Wolfe. "Utica Shale Energy and Environment Laboratory (USEEL)." U.S. Department of Energy, National Energy Technology Laboratory. Grant awarded September 2015. ($7,203,432).

Toman, E.M., and J. Lee. "Surface water quality and ecosystem health with shale energy development." USGS 104(b): Ohio Water Resources Center. Grant awarded March 2014 ($141,652).

Toman, E.M., J.S. Sharp, B.A. Wolfe. "Negotiating better human and natural systems in Appalachia's shale basins." Houston Advanced Research Center, Environmentally Friendly Drilling Program. Grant awarded November 2013 ($14,036).

Skaugset, A. E. and **E. M. Toman**. "The Design of Forest Roads to Minimize the Delivery of Fine Sediment While Transporting Logs During Wet Weather." USDA Cooperative State Research, Education, and Extension Service (CSREES); Center for Wood Utilization. Grant awarded February 2005. ($44,194)

PEER REVIEWED PUBLICATIONS

Xu, H., **E. M. Toman**, K. Zhao, J. Baird. 2022 Fusion of Lidar and Aerial Imagery to Map Wetlands and Channels via Deep Convolutional Neural Network. Transportation Research Record, 0(0). https://doi-org.proxy.lib.ohio-state.edu/10.1177/03611981221095522

Hu, T., **E. M. Toman,** G. Chen, G. Shao, Y. Zhou, Y. Li, K. Zhao, Y. Feng. 2021 Mapping fine-scale human disturbances in a working landscape with Landsat time series on Google Earth Engine. *ISPRS Journal of Photogrammetry and Remote Sensing.* 176(2021): 250-261.

Zhao, K., M. Wulder, T. Hu, R. Bright, Q. Wu, H. Qin, Y. Lin, **E. M. Toman**, B. Mallick, X. Zhang, M. Bean. 2019. Detect change-point, trend, and seasonality in satellite time series data to track abrupt changes and nonlinear dynamics: A Bayesian ensemble algorithm. *Remote Sensing of Environment.* 232 (2019) 111181.

Silliman, B. A. and **E. M. Toman.** 2019. Production of sediment from the running surface of unbound aggregate roads in southeast Ohio, USA. *International Journal of Forest Engineering.* 30(2):99-108.

Liu, D., **E.M. Toman,** Z. Fuller, G. Chen, A. Londo, X. Zhang, and K. Zhao. 2018. Integration of historical map and aerial imagery to characterize long-term land-use change and landscape dynamics: An object-based analysis via Random Forests. *Ecological Indicators.* 95(1):595-605.

Toman, E. M., A. E. Skaugset, and A. N. Simmons. 2014. Calculating Discharge from Culverts under Inlet Control Using Stage at the Inlet. *Journal of Irrigation and Drainage Engineering.* 140(2) 06013003.

Toman, E. M. and A. E. Skaugset. 2011. Reducing sediment production from forest roads during wet-weather hauling. *Transportation Research Record: Journal of the Transportation Research Board.* 2203 (1) 13-19.

Toman, E. M., A. E. Skaugset, and G. E. Murphy. 2007. An Analysis of the Opportunity Costs with Wet Weather Timber Hauling. *International Journal of Forest Engineering*. 18(1) 17-23.

TECHNICAL REPORTS

Toman, E.M., H. Xu, K. Zhao. 2022. Stream & Wetland Mitigation Forecasting: Developing a Predictive Model for Faster Project Delivery and Cost-Savings. The Ohio Department of Transportation, Office of Statewide Planning & Research Project ID Number: 111458. Final Report. 43 pages.

PROCEEDINGS

"Incorporating the measurement of sustainability in undergraduate natural resources curriculum." Proceedings of The Joint 44th Annual Meeting of Council on Forest Engineering (COFE), the 54th International Symposium on Forest Mechanization (FORMEC), and 2022 IUFRO All-Division 3 Meeting. October 4-7, 2022, Corvallis, Oregon, USA.

"Impacts of Hydraulic Fracturing Infrastructure on Storm Runoff Characteristics." L. M. Bond (student) first author. EWRI World Environmental and Water Resource Congress. American Society of Civil Engineers. West Palm Beach, Florida. May 2016.

"Best Management Practices for Access Roads for Shale Energy Development with Consideration to Surface Waterbodies." G.R. Keller co-author. American Society of Civil Engineers (ASCE), Shale Energy Engineering Conference, Pittsburgh, PA. July 2014.

"Designing Forest Roads to Minimize Sediment Production with Wet Weather Hauling." A. E. Skaugset co-author. 30th Annual Meeting of the Council on Forest Engineering, Mont-Tremblant, Quebec, Canada. October 1-4, 2007.

"Reducing sediment production from forest roads." A. E. Skaugset co-author. International Mountain Logging and 13th Pacific Northwest Skyline Symposium. Corvallis, Oregon. April 1- 6, 2007.

"Sediment Production from Alternative Designs for Forest Roads with Wet Weather Use." Forest Operations, Soil, and Hydrology. Proceedings of the 1st Annual Department of Forest Engineering Graduate Student Research Symposium. Corvallis, Oregon. March 15, 2007

"Designing Forest Roads to Minimize Turbid Runoff During Wet Weather Use." A. E. Skaugset co-author. Watershed Management: To Meet Water Quality Standards and TMDLs. Proceedings of the 10-14 March 2007 Conference. Published by American Society of Agricultural and Biological Engineers.

"The Opportunities to Haul Timber during Wet Weather with Forest Road Improvements." A. E. Skaugset and G. E. Murphy co-authors. 28th Annual Meeting of the Council on Forest Engineering, Arcata, California. July 11-14, 2005.

"The Magnitude and Timing of Runoff from Forest Roads Relative to Stream Flow at Live Stream Crossing Culverts in Western Oregon." A. E. Skaugset co-author. 26th Annual Meeting of the Council on Forest Engineering, Bar Harbor, Maine. September 7-10, 2003.

CONFERENCE PRESENTATIONS

"Fusion of Aerial Imagery and Lidar to Map Wetlands and Channels via Deep Learning and Terrain Analysis." Xu, H., K. Zhao, J. Baird co-authors. Annual Meeting the Transportation Research Board of the National Academies of Science. January 12, 2022, Washington, D.C.

"How Amur Honeysuckle (Lonicera maackii) Removal Impacts Avian Assemblage Composition." DeJong, L. (student) first author, S. Matthews co-author. Society for Ecological Restoration Midwest-Great Lakes Annual Meeting. April 2021. Virtual Poster.

"How Removing a 'Soulless' Shrub Affects the Community Structure of Songbirds." DeJong, L. (student) first author, S. Matthews co-author. Oral (Virtual) presentation. North American Ornithological Association Conference. August 2020. Due to COVID-19, this conference occurred virtually instead of in San Juan, Puerto Rico.

"Avian Assemblage Composition Response to the Removal of Amur Honeysuckle (Lonicera maackii)." DeJong, L. (student) first author, S. Matthews co-author. Virtual Poster. International Association for Landscape Ecology - North America. May 12, 2020. Viewcount: 400+ Due to COVID-19, this conference occurred virtually instead of in Toronto, ON.

"Modeling nonlinear crop responses to climate variability in the US Using a Bayesian Approach." T. Hu (student) first author, K. Zhao co-author. Annual Meeting of the American Geophysical Union, San Francisco, California. December 9-13, 2019.

"Capturing human disturbance to the landscape using a Bayesian framework with Google Earth Engine." Poster Presentation. T. Hu (student) first author, K. Zhao co-author. The Ohio State University, College of Food, Agricultural, and Environmental Sciences Annual Research Conference. Columbus, Ohio. April 22, 2019.

"Production of sediment from the running surface of unbound aggregate roads in southeast Ohio, USA." B. A. Silliman co-author. 41st Annual Meeting of the Council on Forest Engineering, Williamsburg, Virginia. July 15-18, 2018.

"Production of sediment from the running surface of unbound aggregate roads in southeast Ohio, USA." Poster Presentation. B. A. Silliman (student) first author. Annual Meeting of the Transportation Research Board of the National Academy of Science. Washington, D.C. January 8, 2018.

"Surface Water Quality and Microbial Communities in Three Ohio Watersheds." Poster Presentation. C. R. Sheban (student) first author. Denman Undergraduate Research Forum, The Ohio State University, Columbus, Ohio. March 25, 2015.

"Quantification of Gravel Rural Road Sediment Production." Poster Presentation. B. A. Silliman (student) first author. Annual Meeting of the American Geophysical Union, San Francisco, California. December 15-19, 2014.

"Designing Forest Roads to Minimize Turbid Runoff during Wet Weather Hauling." Poster Presentation. A. E. Skaugset co-author. Annual Meeting of the Council on Forest Engineering, Coeur d'Alene, Idaho. July 30 – August 2, 2006.

"How Forest Roads Affect the Hydrology of Streams at Stream Crossing Culverts." Invited speaker, Graduate Student Conference, Oregon State University. April 13, 2005.

"Increases in Stream Flow at Stream Crossings on Forest Roads in Western Oregon." Poster Presentation. A. E. Skaugset co-author. Annual Fall Meeting of the American Geophysical Union. San Francisco, California. December 13-17, 2004.

"The Hydrology of Forest Roads & Roaded Watersheds: The Oak Creek Study." Poster Presentation. A. E. Skaugset et al. co-authors. Oregon Logging Conference. Eugene, Oregon. February 25-27, 2004.

"Use of Stable Isotope Tracers as a Diagnostic Tool for Determining Connectedness of Road Runoff to Stream Peak Flows in Disturbed Forest Environments." Poster Presentation. A. E. Skaugset, J. J. McDonnell, and R. F. Keim co-authors. Annual Fall Meeting of the American Geophysical Union. San Francisco, California. December 8-12, 2003.

WEBINARS

"Stream & Wetland Mitigation Forecasting: Developing a Predictive Model for Faster Project Delivery and Cost-Saving." AASHTO Waterway Permits Working Group. *December 14, 2022.* Estimated participants: 20.

"Stream & Wetland Mitigation Forecasting: Developing a Predictive Model for Faster Project Delivery and Cost-Saving." Haiqing Xu co-presenter. ODOT Research Station webinar. *June 13, 2022.* Estimated participants: 37.

"Erosion and Sediment Control for Native and Aggregate Surfaced Roads." Steve Bloser, Center for Dirt and Gravel Road Studies, co-presenter. Moderator: Mike Long, Oregon Department of Transportation. Sponsored by the Transportation Research Board of the National Academies. *April 4, 2012.* Estimated participants: 306.

INVITED PRESENTATIONS

Faculty Panel on Instructional Redesign. "Random Call for Active Learning in a Medium Enrollment Class." Panelist, Michael V. Drake Institute for Teaching and Learning. The Ohio State University. December 2, 2022.

The Ohio State University, Department of Food, Agriculture and Biological Engineering. "Characterizing the Effects of Land Management on Ecosystem Health" Invited Speaker. Seminar Series. March 2, 2021

Environmental Professionals Network. "O Christmas Tree, O Christmas Tree - how sustainable are thy branches?" Presenter, Monthly Breakfast Series. December 4, 2018.

The Water Management Association of Ohio and The Ohio Water Resources Center. "Unpaved Rural Roads and Stream Water Quality." Speaker, Water Luncheon Seminar. April 15, 2015.

The Ohio State University, College of Food, Agricultural and Environmental Science, School of Environment and Natural Resources, Scholars Program, Documentary Screening and Panel Discussion. Panel member: "Shale development in Ohio and Triple Divide." February 2015.

The Ohio State University, College of Food, Agricultural and Environmental Science, Congressional Assistants Tour. Panel member: "Water quality and shale energy, research and extension's role in addressing these issues." August 2014.

SUPERVISED THESES

Allen, T.E. 2021. Removal of Invasive Honeysuckle (*Lonicera maackii*) and the Diversity and Abundance of Terrestrial Invertebrates. Undergraduate Thesis of the Honors Program Bachelor of Science with Distinction. The Ohio State University. 36 pgs.

DeJong, L.N. 2020. Impacts of Amur Honeysuckle (*Lonicera maackii)* Removal on the Composition of Avian Assemblages in Rural Riparian Forests. Master of Science Thesis. The Ohio State University. 121 pgs.

Bond, L.M. 2016. Impacts of Hydraulic Fracturing Infrastructure on Storm Runoff Characteristics. Master of Science Thesis. The Ohio State University. 113 pgs.

Silliman, B. A. 2015. Production of road born sediment of an agricultural road network in southeast Ohio. Master of Science Thesis. The Ohio State University. 87 pgs.

Sheban, C.R. 2015. Correlating Sediments and Microorganisms in Three Ohio Watersheds. Undergraduate Thesis of the Honors Program Bachelor of Science with Distinction. The Ohio State University. 44 pgs.

TEACHING ACTIVITIES

Ohio State University

Instructor:

Sustainability Metrics, (ENR 3900), Autumn 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022; Spring 2016, 2018, 2019, 2020, 2021, 2022, 2023. Online and traditional sections 4 credit hours (semester)
Sustainable Forest Products (ENR 432), Spring 2009, Spring 2010, 5 credit hours (quarter)
Fluid Mechanics (CE/EE 3130), Winter 2010, Winter 2012, 4 credit hours (quarter), Spring 2013, Spring 2014, 3 credit hours (semester)

Co-instructor:

Ecological Engineering and Science, (ENR/FABE 5310), Spring 2018, 2019, 2020, 2021, 2022, 2023. 4 credit hours (semester)
Introduction to Forestry, Fisheries and Wildlife, (ENR 3300), Spring 2009, Spring 2010, Spring 2012, 3 credit hours (quarter), Spring 2013, Spring 2014, Spring 2015, 3 credit hours (semester)

Oregon State University

Instructor:

Forest Engineering Fluid Mechanics (FE 330), Spring 2006, 3 credits hours

Co-instructor:

Orientation to Forest Engineering (FE 101), Fall 2005, 2 credit hours

Teaching Assistant:

Forest Watershed Management (FE 434/534), Winter 2006
Forest Engineering Fluid Mechanics (FE 330), Spring 2004

Guest Lecturer/Field Lecturer:

Forest Hydrology (FE 532), "The effects of forest management on water yield and flow" (4 lectures), 2005
Soil Mechanics (FE 316), "Geosynthetics and their use in retaining structures," 2004
Forest Watershed Management (FE 434/534), "Road hydrology field techniques," 2004
Civil Engineering Materials (CE 321), "Geosynthetics in road design," 2003

Utah State University
Teaching Assistant:
Computing Skills for Natural Resources (NR 201), 1997, 1998

TEACHING ENDORSEMENTS

Teaching Online Endorsement, The Michael V. Drake Institute for Learning and Teaching. Awarded January 2022.
Teaching with Technology Endorsement, The Michael V. Drake Institute for Learning and Teaching. Awarded June 2022.

PROFESSIONAL DEVELOPMENT

Participant. Effective LCA with SimaPro Desktop. 21-hour training course. Pré Sustainability. September 2022.

Instructional Redesign Program. Certificate of Completion. The Michael V. Drake Institute for Learning and Teaching. Awarded August 2022.

Participant. How Learning Works Book Club. 8-hour course. Michael V. Drake Institute for Teaching and Learning. The Ohio State University. December 2021.

Participant. Instructional Re-design On-Demand Short Course: Active Learning in the Large Enrollment Classroom. Michael V. Drake Institute for Teaching and Learning. The Ohio State University. September 2021.

Participant. ArcGIS Online Challenge (learning path). 10-hour course. The Ohio State University. October 2020.

Wetland Delineation Training Course. Certificate of completion. Midwest Biodiversity Institute. September 2019.

Participant. ASCE Continuing Education, "Permeable Pavements: Design, Construction, and Maintenance," 12-week online guided course. January – April 2019.

Participant. Winter Break 2014 Course Design Institute, University Center for the Advancement of Teaching, The Ohio State University. December 2014.

Invited Participant, Oregon State University, 17th Annual Memorial Union Program Council, Women's Leadership Conference, "Aim High: Designing and Reaching Personal Goals." Corvallis, Oregon. February 11, 2006.

Invited Participant and Recorder. National Association of University Forest Resources Programs, National Summit. "Forest Resources for the 21st Century: Defining Strategic Directions and Rebuilding Capacity." Shepherdstown, West Virginia. January 4-6, 2006.

Invited Conference Attendee, Oregon State University, 15th Annual Memorial Union Program Council, Women's Leadership Conference, "Shoot for the Stars." Corvallis, Oregon. February 7, 2004.

Invited Conference Attendee, Oregon Women in Higher Education, 24th Annual Conference, "Women Creating History: Personal Journeys." Portland, Oregon. January 30, 2004.

PROFESSIONAL SERVICE

2018 Reviewer for *Journal of Hydrology*
2016, 2019 Reviewer for *Forest Science*
2016, 2020 Reviewer for *Journal of Irrigation and Drainage Engineering*
2013-2022, Reviewer for *Transportation Research Record*

2013, 2018 Reviewer for *International Journal of Forest Engineering*
2011-2019 Invited member, Committee on Low-Volume Roads, Transportation Research Board of the National Academy of Science
2011-2019 Invited member, Subcommittee on Research for Low-Volume Roads, Transportation Research Board of the National Academy of Science
2017-2018 Faculty Advisor, Engineers Without Borders, OSU Student Chapter
2014-2016 Committee member, Wetlands Advisory Committee, Schiermeier Olentangy River Wetland Research Park, The Ohio State University
2010, 2011 Communications Chair, board of directors, Central Ohio Watersheds Council
2010, 2011 Advisory Council member for Alum, Lower Olentangy, and Big Walnut Watersheds Coordinator position within the Franklin Soil and Water Conservation District
2010, 2011 Secretary, Friends of Big Walnut Creek and Tributaries
2007 Facilities chair, Department of Forest Engineering Graduate Student Research Symposium
2006, 2007 Reviewer for the *Journal of Soil and Water Conservation*.
2004 Graduate student representative for a review committee for Department Head Steven Tesch.
2003, 2004 Visiting scientist for Corvallis School District Outdoor School.

PROFESSIONAL MEMBERSHIPS, PAST AND CURRENT

American Society of Civil Engineers
Central Ohio Watershed (COW) Council
Friends of Big Walnut Creek and Tributaries
American Geophysical Union
Council on Forest Engineering
Society of Women Engineers, Willamette Chapter
International Geosynthetics Society
North American Geosynthetics Society
Phi Kappa Phi
Xi Sigma Pi

HONORS AND AWARDS

Honorable Mention for the Student Communication Award for conference proceedings. Council on Forest Engineering, 28th Annual Meeting, 2005.

Awarded scholarship to attend the Oregon Women in Higher Education's Annual Conference, 2004.

Scholarships and fellowships for academic excellence:
- Oregon State University, College of Forestry
  - Dorothy D. Hoener Memorial Scholarship: Academic years 2002, 2003, 2004, 2005
  - A. and V. Meier Educational Fund Scholarship: Academic year 2001
- Oregon State University, Department of Forest Engineering
  - Richardson Family Graduate Fellowship: Academic years 2001, 2002
  - Gibbet Hill Fellowship: Academic years 2003, 2004, 2005, 2006
- Oregon State University, Graduate School
  - Oregon Sports Lottery Scholarship: Academic years 2005, 2006