

AQUILA FLOWER

CURRICULUM VITAE

Department of Environmental Studies
College of the Environment
Western Washington University

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EDUCATION

PhD, Geography, University of Oregon — 2009-2013

Dissertation title: *Interactions Among Climatic Variability, Defoliating Insects, and Wildfires in the Interior Pacific Northwest.*

MSc, Geography, University of Victoria — 2006-2009

Thesis title: *A Dendroclimatic Investigation in the Northern Canadian Rocky Mountains, British Columbia.*

BA, Summa Cum Laude, Geography, Humboldt State University — 2002-2004

Thesis title: *Physical Geography of the Qinghai-Tibetan Plateau.*

PROFESSIONAL EMPLOYMENT

Director, Western Washington University Spatial Institute, 2024-present

Professor, Western Washington University, 2024-present

Associate Professor, Western Washington University, 2018-2024

Assistant Professor, Western Washington University, 2013-2018

Research Assistant & Instructor, University of Oregon, 2009-2013

Analyst - Ecosystems Impacts, Pacific Climate Impacts Consortium, 2008-2009

Research Assistant, University of Victoria, 2006-2008

PUBLICATIONS

Peer-reviewed journal articles

Underlined names indicate student advisee co-author.

Flower, A. 2025: *in review*. Review of *Salish Archipelago*. BC Studies.

Loughren, J., McPhee-Shaw, E., Crosland, J., Harrison, A., **Flower, A.**, De Bruyn, W., Clark, C.D. 2024: *in review*. Temporal and Seasonal Variability of Riverine Inputs vs. In Situ Production as Drivers of Dissolved Organic Matter in Bellingham Bay in the Salish Sea. *Estuaries and Coasts*.

Flower, A., Wang, X., Furness, N., Bradford, E. L. 2025. Climate Change in the Salish Sea Region: historical and projected future trends in temperature and precipitation. *Emerging Issues in the Salish Sea Series*.

Furness, N., **Flower, A.** 2025. The Effects of Climatic and Cultural Changes on Grain Agriculture in Northwest Washington. *Geographies*, 5 (1).

Gleaves, D. and **Flower, A.** 2025. Dendrochronology of the Seaside Juniper (*Juniperus maritima*). *Tree-Ring Research*, 81 (1).

Flower, A. 2024. Review of *The Power Of Trees: How Ancient Forests Can Save Us If We Let Them*. BC Studies no. 220:130-132.

Sobocinski, K.L., Harvell, C.D., Baloy, N.J.K., Broadhurst, G. Dethier, M.N., **Flower, A.**, Delaney, J.R. 2022. Urban seas are hotspots of stress in the Anthropocene Ocean: the Salish Sea as an example. *Elementa*, 10 (1).

Hagedorn, B., **Flower, A.** 2021. Conifer Establishment and Encroachment on Subalpine Meadows around Mt. Baker, WA, USA. *Forests*, 12 (10).

Bloom, T., **Flower, A.**, Medler, M., DeChaine, E. 2018. The Compounding Consequences of Climate Change and Wildfire for a High Elevation Wildflower in Western North America. *Journal of Biogeography*, 45 (12): 2755-2765.

O'Leary, D. III, Hall, D., Medler, M., Matthews, R., **Flower, A.** 2018. Investigating The Early Snowmelt Event of 2015 in the Cascade Mountains Using The MODIS-Based Snowmelt Timing Maps. *Frontiers of Earth Science*, 12 (4): 693-710.

Bloom, T., **Flower, A.**, DeChaine, E. 2017. Why Georeferencing Matters: Introducing a Practical Protocol to Prepare Species Occurrence Records for Spatial Analysis. *Ecology and Evolution* 8: 765-777.

Flower, A., Bookout, B., Hagedorn, B., Hankin, L., Lovseth, J., Smith L., Whelan, A. 2017. Muscling into Meadows: a preliminary dendrochronological analysis of recent conifer encroachment in Mount Rainier's subalpine meadows. *Yearbook of the Association of Pacific Coast Geographers*, 79: 115-133.

Ellis, T., **Flower A.** 2017. Climatic Drivers of Western Spruce Budworm Outbreaks in Northeastern Washington. *Canadian Journal of Forest Research*, 47:1266-1277.

Flower, A. 2016. Three Centuries of Synchronous Forest Defoliator Outbreaks in Western North America. *PLoS ONE*, 11(10):e0164737.

Flower, A., Gavin, D.G., Heyerdahl, E.K., Parsons, R., Cohn, G. 2014. Drought-triggered western spruce budworm outbreaks in the interior Pacific Northwest: a multi-century dendrochronological record. *Forest Ecology and Management*, 324:16-27.

Cohn, G., Parsons, R., Heyerdahl, E.K., **Flower, A.**, Gavin, D.G. 2014. Simulated western spruce budworm defoliation reduces torching and crowning potential: a cross-scale sensitivity analysis using a physics-based fire model. *International Journal of Wildland Fire*, 23(5):709-720.

Flower, A., Gavin, D.G., Heyerdahl, E.K., Parsons, R., Cohn, G. 2014. Western Spruce Budworm Outbreaks Did Not Increase Fire Risk over the Last Three Centuries: A Dendrochronological Analysis of Inter-Disturbance Synergism. *PLoS ONE*, 9(12):e114282.

Flower, A., Murdock, T.Q., Taylor, S.W., Zweirs, F.W. 2013. Using an ensemble of downscaled climate model projections to assess impacts of climate change on the potential distribution of spruce and Douglas-fir forests in British Columbia. *Journal of Environmental Science and Policy*, 26:63-74.

Murdock, T.Q., Taylor, S.W., **Flower, A.**, Melenbacher, A., Montenegro, A., Zweirs, F.W., Alfaro, R. 2013. Pest outbreak distribution and forest management impacts in a changing climate in British Columbia. *Journal of Environmental Science and Policy*, 26, 75-89.

Flower, A. and Smith, D.J. 2011. A dendroclimatic reconstruction of June-July mean temperature in the northern Canadian Rocky Mountains. *Dendrochronologia*, 29(1), 55-63.

Professional and technical reports

Flower, A. 2024. Climate of the Salish Sea Bioregion. In *ESRI Map Book, Volume 39*. ESRI.

Flower, A. 2022. The Salish Sea Bioregion. In *ESRI Map Book, Volume 37*. ESRI.

K.L. Sobocinski. 2021. *State of the Salish Sea*, Salish Sea Institute, Western Washington University. Cartography and spatial analysis by **Flower, A.**

Gavin, D.G., **Flower, A.**, Heyerdahl, E.K., Parsons, R., Cohn, G. 2017. Western spruce budworm and wildfire: is there a connection? *Fire Management Today*.

Flower, A., Bookout, B., Hagedorn, B., Hankin, L., Lovseth, J., Smith L., Whelan, A. 2016. Muscling into Meadows: recent conifer encroachment in Mount Rainier's subalpine meadows. Final report for the 2016 North American Dendroecological Fieldweek.

Gavin, D.G, **Flower, A.**, Cohn, G., Heyerdahl, E.K., Parsons, R. 2013. Interactions of insects, fire and climate on fuel loads and fire behavior in mixed conifer forest. Final report for JFSP project, 09-1.

Murdock, T. Q., **Flower, A.** 2009. Final Technical Report Forest Science Program Project# Y093061 Development and analysis of forest health databases, models, and economic impacts for BC: Spruce bark beetle & spruce; western spruce budworm and Douglas fir. Pacific Climate Impacts Consortium, University of Victoria, Victoria, BC.

Books and book chapters (not formally peer-reviewed)

Flower, A. 2022. Climate of the Salish Sea Bioregion. In A. Flower (Ed.) *Salish Sea Atlas*.

Flower, A. 2021. Land Ownership and Management in the Salish Sea Bioregion. In A. Flower (Ed.) *Salish Sea Atlas*.

Flower, A. 2021. Land Cover and Land Use in Salish Sea Bioregion. In A. Flower (Ed.) *Salish Sea Atlas*.

Flower, A. 2021. Human Populations of the Salish Sea Bioregion. In A. Flower (Ed.) *Salish Sea Atlas*.

Flower, A. 2021. Freshwater Hydrography of the Salish Sea Bioregion. In A. Flower (Ed.) *Salish Sea Atlas*.

Flower, A. 2021. Advanced GIS Analysis and Modeling: an open access textbook.

Flower, A. 2020. Where is the Salish Sea? In A. Flower (Ed.) *Salish Sea Atlas*.

Published datasets and maps

Flower, A. and Bradford, M. 2024. Roberts Bank Terminal 2. In Baloy, N. J., Pipp, I., *Mega-Projects, Cumulative Impacts, & Indigenous Nationhood on the Multinational Salish Sea*. Salish Sea Institute, Western Washington University.

Flower, A. 2021. Major sources of freshwater input to the Salish Sea. In K.L. Sobocinski, *State of the Salish Sea*, Salish Sea Institute, Western Washington University.

Flower, A. 2021. Subbasins of the Salish Sea. In K.L. Sobocinski, *State of the Salish Sea*, Salish Sea Institute, Western Washington University.

Flower, A. 2021. Prevailing surface and bottom water circulation in the Salish Sea. In K.L. Sobocinski, *State of the Salish Sea*, Salish Sea Institute, Western Washington University.

Flower, A. 2021. Human population density in the Salish Sea region as of 2010. In K.L. Sobocinski, *State of the Salish Sea*, Salish Sea Institute, Western Washington University.

Flower, A. 2021. Jurisdictions in the Salish Sea. In K.L. Sobocinski, *State of the Salish Sea*, Salish Sea Institute, Western Washington University.

Flower, A. 2021. Land cover in the Salish Sea bioregion. In K.L. Sobocinski, *State of the Salish Sea*, Salish Sea Institute, Western Washington University.

Flower, A. 2020. Reference Map for the Salish Sea Bioregion.

Flower, A. 2020. Physical Geography Reference Map for the Salish Sea Bioregion.

Flower, A. 2018. Atlas of the San Juan - Gulf Islands Archipelago. WWU Spatial Institute.

Kamel, N., **Flower, A.** 2017. Trans-border Atlas Collaborative: Washington and British Columbia. WWU Border Policy Research Institute.

Coastal Geologic Services, **Flower, A.** 2017. Nearshore Geospatial Framework. Puget Sound Partnership.

O'Leary III, D., Hall, D.K., Medler, M., Matthews, R., **Flower, A.** 2017. Snowmelt Timing Maps Derived from MODIS for North America, 2001-2015. ORNL DAAC, Oak Ridge, Tennessee, USA. <https://doi.org/10.3334/ORNLDAAAC/1504>

TEACHING EXPERIENCE

Western Washington University:

Physical Geography

GIS III: Analysis and Modeling

Climatology

GIS IV: Advanced GIS Applications

Biogeography

Advanced Spatial Analysis

GIS I: Introduction to GIS

Communicating Research Results

Professional Geographer

Geography Scholars

Navigating Environmental Studies

Introduction to Climate Change

University of Oregon:

Biogeography

Long-term Environmental Change

Advanced Biogeography -
Dendrochronology

Mapping and Geospatial Concepts

Thesis Writing

GRANTS and CONTRACTS

Flower, A. 2024. *Updating and Expanding the Health of the Salish Sea Ecosystem Indicators: Climate Change and Landscape Change*. Puget Sound Partnership. \$101,863.

Flower, A. 2024. *Salish Sea Institute – Salish Sea Fellows*. Ecosystem Health Indicators for the Salish Sea. \$5,500.

Furness, N. and **Flower, A.** 2024. Active Channel Mapping for the Puget Sound. \$538,280.

Flower, A. 2022. *Salish Sea Institute - Salish Sea Fellows*. Climate Change Assessment for the Salish Sea. \$17,243.

Flower, A. 2021. *WWU Faculty Summer Teaching Grant*. Geographic Information Science for Social Justice. \$6,000.

Flower, A. 2021. *WWU Office of Research and Sponsored Programs Small Grant*. Conifer Establishment and Encroachment on Subalpine Meadows around Mt. Baker, WA, USA. \$1,800.

Flower, A. 2019. *Salish Sea Institute and Border Policy Research Institute*. “Atlas of the Salish Sea”. \$14,500

Flower, A. 2017. *WWU Office of Research and Sponsored Programs Small Grant*. “Why Georeferencing Matters: Introducing a Practical Protocol to Prepare Species Occurrence Records for Spatial Analysis”. \$1,560.

Flower, A. 2017. *FELÁNET Centre for Innovation and Peace*. “Salish Sea Archipelago Atlas”. \$13,200.

Flower, A. in collaboration with Coastal Geologic Services. 2017. *Puget Sound Partnership*. “Nearshore Geospatial Framework Development”. \$32,890.

Flower, A. 2017. *WWU Office of Research and Sponsored Programs Pilot Project Grant*. "High-resolution 3D mapping for ecological monitoring of the subalpine ecotone in the North Cascades" \$3,888.

Flower, A. 2016. *WWU Office of Research and Sponsored Programs Small Grant*. "Three Centuries of Synchronous Forest Defoliator Outbreaks in Western North America". \$1,495.

Flower, A. 2016. *Puget Sound Partnership 2016 Action Agenda - Near Term Action*. Puget Sound Partnership. "Salish Sea Geospatial Clearinghouse". Accepted as part of the Puget Sound Partnership's slated projects, \$88,276 requested, final funding pending EPA National Estuary Program decision.

Flower, A. 2016. *Faculty Development Summer Grant*. Open Source Resource Development for ENV 203: Physical Geography. \$4,000.

Kamel, N. and **Flower, A.** 2015. *Border Policy Research Institute Research Award*. "Atlas of the Pacific Northwest". \$30,117.

Flower, A. 2012. *National Science Foundation Doctoral Dissertation Research Improvement Grant*. "Doctoral Dissertation Research: Interactions Among Forest Defoliator Outbreaks, Wildfires, Climatic Variability, and Nitrogen Availability in the Interior Pacific Northwest". \$15,961.

Flower, A. 2012. *Mazamas Foundation Graduate Student Research Grant*. "Interactions between Forest Defoliator Outbreaks, Wildfires, Climatic Variability, and Nitrogen Availability in Montane Forests of the Interior Pacific Northwest". \$1,440.

Flower, A. 2007, 2006. *University of Victoria Graduate Fellowship*. Two-year fellowship for \$20,000.

AWARDS

2023. *Excellence in Teaching Award*. Western Washington University.

2023. *Best Atlas or Map Series, third place*. 2023 ESRI User Conference.

2021. *Best Atlas or Map Series, second place*. 2021 ESRI User Conference.

2012. *Christopherson Geosystems Award for Best Applied Geography/Earth Systems Graduate Student Paper*. 2012 Annual Meeting of the Association of Pacific Coast Geographers.

2011. *Tom McKnight and Joan Clemens Award for an Outstanding Student Paper*. 2011 Annual Meeting of the Association of Pacific Coast Geographers.

2011, 2010. *Association of Pacific Coast Geographers Women's Network Travel Grant*.

2010. *Best Poster*. 2010 Annual Meeting of the Association of Pacific Coast Geographers.

2010. *Best Graduate Student Poster*. MtnClim 2010 Conference.

INVITED CONFERENCE AND SEMINAR PRESENTATIONS

Sobocinski, K., **Flower, A.** 2025. Our Place in the Salish Sea. Sound Waters University. Coupeville, WA. **[invited keynote presentation]**

Flower, A. 2024. Climate Change Assessment for the Salish Sea Bioregion. Presented to the Environment and Climate Change Canada (ECCC) & U.S. Environmental Protection Agency (EPA) Joint Statement of Cooperation on the Salish Sea Ecosystem (SOC) Working Group Spring 2024 Meeting. Vancouver, BC. **[invited presentation]**

Flower, A. 2024. Transboundary Mapping in the Salish Sea Region, part of the Bridging the Border: Challenges and Opportunities in the Salish Sea Region Plenary. Washington and Oregon Higher Education Sustainability Conference. Bellingham, WA. **[invited plenary panelist and panel organizer]**

Flower, A. 2024. The Salish Sea Atlas. Transport Canada's Salish Sea Symposium. Vancouver, BC. **[invited panelist and panel organizer]**

Flower, A. 2023. Creating an Atlas of the Salish Sea. College of the Environment Speaker Series. Bellingham, WA. **[invited]**

Flower, A. 2022. Collaborative Futures for the Salish Sea. Salish Sea Ecosystem Conference. Bellingham, WA. **[invited panelist]**

Flower, A. 2022. Creating an Atlas of the Salish Sea. College of the Environment Speaker Series. Bellingham, WA. **[invited]**

Flower, A. 2021. Mapping the Salish Sea & Mapping Tutorial. STEM and the Salish Sea. Bellingham, WA. **[invited]**

Flower, A. 2021. Mapping the Salish Sea. State of the Salish Sea: Symposium #1. Bellingham, WA. **[invited]**

Flower, A., 2017. Fires and Insect Outbreaks: What Can Tree Rings Tell Us About Synergism Between Disturbances? University of Washington Geography Colloquium. Seattle, WA. **[invited]**

Flower, A., 2017. Insect outbreaks and fires: dendrochronological analyses of inter-disturbance synergism. PaleoEvents Workshop. Woodland Park, CO. **[invited]**

Flower, A., 2017. Building a Digital Atlas of the Pacific Northwest. WWU Speaking of Maps Series. Bellingham, WA. **[invited]**

Flower, A., Bookout, B., Hagedorn, B., Hankin, L., Lovseth, J., Smith L., Whelan, A. 2016. Muscling into Meadows: recent conifer encroachment in Mount Rainier's subalpine meadows. North American Dendroecological Fieldweek. Eatonville, WA. **[invited]**

Flower, A., 2015. Western spruce budworm and fire risk. North American Defoliator Working Group meeting. Ogden, UT. **[invited]**

Flower, A., 2014. Do western spruce budworm outbreaks increase fire risk? UBC Forestry Seminar Series. Vancouver, BC Canada. **[invited]**

Flower, A., 2012. Interactions between western spruce budworm outbreaks and wildfires in the interior Pacific Northwest: a multi-century dendrochronological record. Fifth International Fire Ecology and Management Congress. Portland, OR. **[invited]**

Flower, A., 2012. Interactions of insects, fire and climate on fuel loads and fire behavior in mixed conifer forests. Central Oregon Fire Science Symposium. Bend, OR. **[invited]**

Flower, A., 2009. Assessing the impact of climate change on the risk of western spruce budworm and spruce bark beetle outbreaks. Pacific Forestry Center. Victoria, BC. **[invited]**

Murdock, T.Q., and **Flower, A.**, 2009. Assessing the Potential Impacts of Climate Change on Douglas Fir and Spruce Forests in British Columbia Using Bioclimatic Envelope Models. Pacific Forestry Center. Victoria, BC. **[invited]**

Flower, A., 2009. Assessing the Potential Impacts of Climate Change on Douglas Fir and Spruce Forests in British Columbia Using Bioclimatic Envelope Models. Canadian Center for Climate Modelling and Analysis seminar series. Victoria, BC. **[invited]**

Flower, A., 2009. Modeling the Future Impacts of Climate Change on Douglas Fir and Spruce Forests in British Columbia. British Columbia Ministry of Forests and Range Climate Change Seminar Series. Victoria, BC. **[invited]**

CONFERENCE AND SEMINAR PRESENTATIONS

Flower, A. 2024. Creating a Living Atlas of the Salish Sea Bioregion. North American Cartographic Information Society. Tacoma, WA.

Bradford, E. and **Flower, A.** 2024. Finding Space for the Island Marble Butterfly. Ecological Society of America. Long Beach, CA.

Flower, A. 2024. Climate Change in the Salish Sea Bioregion. ESRI User Conference. San Diego, California.

Flower, A. 2024. Creating a Living Atlas of the Salish Sea Bioregion. ESRI User Conference. San Diego, California.

Flower, A. 2023. Climate of the Salish Sea Bioregion. ESRI User Conference. San Diego, California.

Flower, A. 2023. Creating a Living Atlas of the Salish Sea Bioregion. American Association of Geographers. Denver, CO.

Flower, A. 2022. Salish Sea Atlas. ESRI User Conference. San Diego, California.

Flower, A. 2022. Atlas of the Salish Sea. Salish Sea Ecosystem Conference. Bellingham, WA.

Flower, A. 2021. Creating an Atlas of the Salish Sea. Association of Pacific Coast Geographers. San Diego, California.

Flower, A. 2021. Reference Map for the Salish Sea Bioregion; and Where is the Salish Sea? International Cartographic Exhibition. Florence, Italy.

Flower, A. 2021. Reference Map for the Salish Sea Bioregion; Freshwater of the Salish Sea Bioregion; and Human Populations of the Salish Sea Bioregion. North American Cartographic Information Society. Oklahoma City, Oklahoma.

Flower, A. 2021. The Salish Sea's Watersheds in the Context of Major North American Watersheds. ESRI User Conference. San Diego, California.

Flower, A. 2021. Salish Sea Atlas – Chapter 1: Where is the Salish Sea? ESRI User Conference. San Diego, California.

Flower, A. 2020. The Salish Sea Bioregion. ESRI User Conference. San Diego, California.

Drummond, H., **Flower, A.** 2019. Automated beach feature delineation from high-resolution digital elevation models. Association of Washington Geographers. Ellensburg, WA.

Fast, B., **Flower, A.** 2019. High-resolution vegetation mapping and monitoring with sUAV's. Association of Washington Geographers. Ellensburg, WA.

LaGassey, H., **Flower, A.** 2019. Finding hydrologically teleconnected sites with a network of tree ring chronologies. Association of Washington Geographers. Ellensburg, WA.

Roueché, N., **Flower, A.** 2019. Two decades of Western spruce budworm outbreaks in the Pacific Northwest. Association of Washington Geographers. Ellensburg, WA.

Hagedorn, B., **Flower, A.** 2019. Conifer Invasion: A Multivariate Analysis of Seedling Establishment and Encroachment around Mt. Baker, WA. American Association of Geographers. Washington, D.C.

Gleaves, D., **Flower, A.** 2018. Dendrochronology of Seaside Juniper: a recently discovered rare tree species. Association of Washington Geographers. Bellingham, WA.

Hagedorn, B., **Flower, A.**, Bookout, B., Hankin, L., Lovseth, J., Smith L., Whelan, A. 2018. Muscling into Meadows: recent conifer encroachment in Mount Rainier's subalpine meadows. Association of Washington Geographers. Bellingham, WA.

Lubar, M., and **Flower, A.**, 2018. PDO and ENSO effects on Snowpack. Association of Washington Geographers. Bellingham, WA.

Gleaves, D., **Flower, A.** 2018. Dendrochronology of Seaside Juniper: a recently discovered rare tree species. American Association of Geographers. New Orleans, LA.

Hagedorn, B., **Flower, A.**, Bookout, B., Hankin, L., Lovseth, J., Smith L., Whelan, A. 2018. Muscling into Meadows: recent conifer encroachment in Mount Rainier's subalpine meadows. American Association of Geographers. New Orleans, LA.

Lubar, M., and **Flower, A.**, 2017. PDO and ENSO effects on Snowpack. Northwest Climate Conference. Tacoma, WA.

Flower, A., 2017. Synchrony of western spruce budworm outbreaks over the last three centuries. Ecological Society of America. Portland, OR.

Flower, A., 2017. Synchrony of Western Spruce Budworm Outbreaks Across Western North America Over the Last Three Centuries. American Association of Geographers. Boston, MA.

Flower, A., 2016. Three Centuries of Synchronous Forest Defoliator Outbreaks in Western North America. Association of Pacific Coast Geographers. Portland, OR.

Flower, A., 2016. Tree-ring Records of Forest Defoliator Insect Outbreaks in Western North America. Association of Washington Geographers. Seattle, WA.

Flower, A., 2016. Three Centuries of Synchronous Forest Defoliator Outbreaks in Western North America. American Association of Geographers. San Francisco, CA.

Bloom, T., **Flower, A.**, and DeChaine, E., 2015. The Shortcomings of Historical Herbaria Records for Species Distribution Modeling: Introducing a Standardized Georeferencing Process. Association of Washington Geographers. Bellingham, WA.

Nakae, A., MacDonald, A., and **Flower, A.**, 2015. Using Ecological Niche Modeling with GIS to Predict *Juniperus maritima*'s Current and Future Habitat. Association of Washington Geographers. Bellingham, WA.

Flower, A., 2015. Do western spruce budworm outbreaks increase fire risk? Association of American Geographers. Chicago, IL.

Flower, A., 2014. Wildfires and western spruce budworm outbreaks: A multi-century dendrochronological record of forest disturbance interactions in the interior Pacific Northwest. Ecological Society of America. Sacramento, CA.

Flower, A., 2014. Using tree-rings to reconstruct three centuries of western spruce budworm outbreaks in the interior Pacific Northwest. Association of Washington Geographers. Olympia, WA.

Flower, A., 2014. Wildfires and western spruce budworm outbreaks: A multi-century dendrochronological record of forest disturbance interactions in the interior Pacific Northwest. Western Division of the Canadian Association of Geographers. Victoria, BC.

Flower, A., 2013. Climatic drivers of western spruce budworm outbreak dynamics in the interior Pacific Northwest. AmeriDendro. Tucson, AZ.

Flower, A., 2013. Interactions between western spruce budworm outbreaks and wildfires in the interior Pacific Northwest: a multi-century dendrochronological record. Association of American Geographers. Los Angeles, CA.

Flower, A., 2013. Interactions between western spruce budworm outbreaks and wildfires in the interior Pacific Northwest: a multi-century dendrochronological record. Oregon Academy of Science. Salem, OR.

Flower, A., 2012. Interactions between western spruce budworm outbreaks and wildfires in the interior Pacific Northwest: a multi-century dendrochronological record. Association of Pacific Coast Geographers. Olympia, WA.

Flower, A., 2011. A multi-century dendrochronological history of western spruce budworm outbreaks in the interior Pacific Northwest. Association of Pacific Coast Geographers. San Francisco, CA.

Flower, A., 2011. A multi-century history of western spruce budworm outbreaks in the Douglas-fir forests of northeastern Oregon, central Idaho, and western Montana. Association of American Geographers. Seattle, WA.

Flower, A., and Gavin, D.G., 2011. Using Tree Rings to Reconstruct Western Spruce Budworm Outbreak Histories in the Interior Pacific Northwest. Oregon Academy of Sciences. Portland, OR.

Flower, A., 2010. Western Spruce Budworm Outbreak, Climate, and Wildfire Interactions in the Interior Pacific Northwest. Association of Pacific Coast Geographers. Coeur d'Alene, ID.

Flower, A., Gavin, D.G., Heyerdahl, E.K., and Parsons, R.A., 2010. Western Spruce Budworm Outbreak, Climate, and Fire Interactions in the Mixed Conifer Forests of the Interior Pacific Northwest. MtnClim. Blue River, OR.

Flower, A., Gavin, D.G., Heyerdahl, E.K., and Parsons, R.A., 2010. Climate, Insect Outbreak, Fire, and Fuel Load Interactions in the Mixed Conifer Forests of Northeastern Oregon, Idaho, and Western Montana. Association of American Geographers. Washington, D.C.

Gavin, D.G., Herring, E.M., and **Flower, A.**, 2010. Climate and fire controls of broad-scale vegetation patterns in northwestern North America: projections of the climatic water balance and no-analog climates. Association of American Geographers. Washington, D.C.

Flower, A., Murdock, T.Q., and Campbell, K., 2009. Modeling the Future Impacts of Climate Change on Douglas Fir and Spruce Forests in British Columbia. Association of American Geographers. Las Vegas, NV.

Flower, A., 2009. Bioclimatic Envelope Modelling: Assessing the Potential Impacts of Climate Change on Douglas Fir and Spruce Forests in British Columbia. Western Division of the Canadian Association of Geographers. Nanaimo, BC.

Flower, A., 2008. Projected Changes in Climatic Suitability for Spruce and Douglas Fir Forests in British Columbia. American Geophysical Union. San Francisco, CA.

Flower, A. and Smith, D.J., 2008. Reconstructing June-July Air Temperature Variability in the Northern Canadian Rocky Mountains. Ameridendro. Vancouver, BC.

Flower, A. and Smith, D.J., 2008. Reconstructing Summer Temperatures in the Northern Canadian Rocky Mountains. Association of American Geographers. Boston, MA.

Flower, A., 2008. Pacific Climate Impacts Consortium. Climate Change Impacts on Ecology and the Environment workshop at the Banff International Research Station. Banff, AB.

Flower, A. and Smith, D.J., 2008. Growth Response of Conifers to Climatic Variability in the Northern Canadian Rocky Mountains. Western Division of the Canadian Association of Geographers. Bellingham, WA.

PROFESSIONAL SERVICE

Academic community:

2024-present	Health of the Salish Sea Steering Committee (EPA & ECCC)
2016-present	Registered Agent - Association of Pacific Coast Geographers
2015-2023	Associate Editor - Fire Ecology
2017-2019	President - Association of Washington Geographers
2015-2017	Vice President - Association of Washington Geographers
2016	Instructor - North American Dendroecological Fieldweek

2015-2017	Adviser - WWU SummerStart
2010-2013	President - Lane County Geographical Society

WWU Committees - University-Wide:

2021-present	<i>Salish Sea Faculty Advisory Committee</i>
2023-present	<i>Salish Sea Studies Curriculum Committee</i>
2022-2023	<i>Chair – Salish Sea Studies Curriculum Committee</i>
2020-2023	<i>WWU Academic Coordinating Commission</i>
2016-2018	<i>WWU Committee on Undergraduate Education</i>
2017-2018	<i>Faculty Representative - Sehome Hill Arboretum Board of Governors</i>

WWU Committees - College of the Environment:

2022-2023	<i>Chair - College of the Environment Curriculum Committee</i>
2013-2024	<i>College of the Environment Curriculum Committee</i>
2015-2019	<i>College of the Environment Scholarship Committee</i>

WWU Committees - Environmental Studies Department:

2024-present	<i>Environmental Studies MA committee</i>
2021-present	<i>Environmental Studies Curriculum Committee</i>
2013-present	<i>GIS program lead</i>
2014-present	<i>Monahan Scholarship Committee</i>
2023-2024	<i>Environmental Studies hiring committee – GIS Specialist</i>
2023	<i>Environmental Studies hiring committee - GIS Faculty</i>
2013-2021	<i>Geography BA curriculum committee</i>
2017-2018	<i>Environmental Studies hiring committee - Social Justice</i>
2013-2019	<i>Environmental Studies MA committee</i>

2016	<i>Environmental Studies Departmental Awards Committee</i>
2013-2014	<i>Environmental Studies hiring committee - Urban Studies</i>

Conference and workshop service:

2025	Organizer for the American Association of Geographers regional node at WWU
2024	Organizer for the American Association of Geographers regional node at WWU
2024	Co-organizer of the Bridging the Border: Challenges and Opportunities in the Salish Sea Region Plenary Panel. Washington and Oregon Higher Education Sustainability Conference. Bellingham, WA
2024	Co-organizer of the Transboundary Data Sharing: Supporting Decision-Making in the Salish Sea Panel at the Salish Sea Symposium. Vancouver, BC
2017-2022	Organizer for the Association of Pacific Coast Geographers meeting hosted at WWU
2022	Co-Organizer for Salish Sea Day mini-conference at WWU
2017-2018	Co-organizer for the Association of Washington Geographers meeting hosted by WWU
2016-2017	Co-organizer for the Western Division of the Canadian Association of Geographers meeting hosted at WWU
2014-2015	Co-organizer for the Association of Washington Geographers meeting hosted by WWU
2017-2018	Co-organizer for Dendrochronology Sessions at the Association of American Geographers 2018 conference
2016-2017	Co-organizer for Dendrochronology Sessions at the Association of American Geographers 2017 conference
2015-2016	Lead organizer for Dendrochronology Sessions at the Association of American Geographers 2016 conference
2017	Session Chair: <i>Dendrochronology: Disturbance Ecology</i> session at the American Association of Geographers 2017 conference

2016	Panelist - Careers in Biogeography at the Association of American Geographers 2016 conference
2016	Session Chair: <i>Dendrochronology: Disturbance Ecology</i> session at the American Association of Geographers 2016 meeting
2015	Session Chair: <i>Dendrochronology: Disturbance Ecology</i> session at the American Association of Geographers 2015 meeting
2010-2013	Co-organizer of University of Oregon Geography Awareness Week workshops for elementary and middle school classes, undergraduates, and graduates

Manuscript reviewer for:

Tree-Ring Research
Canadian Journal of Forest Research
Forest Ecology and Management
Ecosphere
Oikos
Fire Ecology
Insect Science
Journal of the American Water Resources Association

Other previous responsibilities:

Secretary for the University of Oregon Student Chapter of the American Society of Photogrammetry and Remote Sensing, 2012. University of Oregon: Graduate student representative at faculty meetings, 2010-2013 and Graduate student representative on committee for hiring a tenure track position, 2011. University of Victoria: president of the Teaching Assistants' component of CUPE 4163, 2006-2008. Humboldt State University: undergraduate student representative at faculty meetings, 2004 and Vice President of the Humboldt State University Geographic Society, 2004.

SUPERVISED GRADUATE THESES

Underway	Taylor Kibrick. <i>Woodlands on the San Juan Islands: historical and future changes</i> . Chair.
Underway	Emily Wangsness. <i>Island Marble Butterfly</i> . Chair.
Underway	Anthony Tulloch. <i>Carrying Capacity for Salmon in the Whidbey Basin</i> . Co-Chair.

Underway	Gary Boba. <i>Climate Change and Insect Outbreaks</i> . Chair .
Underway	Lamai Cox. <i>Two Ways of Knowing: Using Community Mapping and Predictive Modeling to Understand Past, Present, and Future Indigenous Kelp Harvesting Practices in Alaska</i> . Chair .
Underway	Colter Lemons. <i>Using Tree Rings to Date Glacial Recession on Mount Baker</i> . Member.
Underway	Taylor Held. <i>Assessing Riparian Buffer Efficacy for Nutrient Retention using the Visualizing Ecosystem Land Management Assessments (VELMA) Model</i> . Member.
2025	Yashel Kakavand. <i>Integration of Climate Change Adaptation in Planning: a study of Washington state coastal communities exposed to sea level rise</i> . Member.
2024	Chelsea Harris. <i>Restoring Forest Habitat: Assisted Migration as a Climate Change Adaption</i> . Member.
2024	Kenna Kuhn. <i>Title TBD – Modeling Sea Level Rise in the Salish Sea Bioregion</i> . Chair .
2023	Natalie Furness. <i>The History and Future of Grain Agriculture in Northwestern Washington</i> . Chair .
2023	Kailey Schillinger-Brokaw. <i>Long-term Ecological Changes in the Rocky Bald and Meadow Ecosystems of the San Juan Islands, Washington</i> . Chair .
2023	Hannah LaGassey. <i>Dendrochronological reconstruction of glacial mass balance and stream flow, North Fork of the Nooksack</i> . Chair .
2021	Kate Welch. <i>Creating a Canadian-US Wildfire Atlas</i> . Co-Chair .
2020	Benjamin Hagedorn, Environmental Studies. <i>Conifer Encroachment in Subalpine Meadows on Mount Baker, Washington</i> . Chair .
2020	Monica Villegas. <i>Dendrochronological Assessment of the Easton Glacier's Terminus Position Over the Last 150 Years</i> . Member.
2018	Dustin Gleaves, Environmental Studies. <i>Dendrochronology of the seaside juniper</i> . Chair .

- 2017 Jordan Wrigley, Environmental Studies. *Stakeholder Perceptions of Salmon Aquaculture in Washington's Salish Sea*. Interim member.
- 2017 Sam Wershow, Biology. *Assessing climate change impacts on the endemic alpine flora of the Olympic Peninsula*. Member.
- 2016 Todd Ellis, Geography. *Climatic Drivers of Western Spruce Budworm Outbreaks in the Okanogan Highlands*. **Chair**.
- 2016 Donal O'Leary, Geography. *Investigating the spatio-temporal relationships between snowmelt timing and wildfire occurrence in the US Mountain West*. Member.
- 2016 Trevor Bloom, Biology. *Compounding Consequences of Climate Change and Wildfire for a High Elevation Wildflower (*Saxifraga austromontana*)*. Member.
- 2016 Katie Rosa, Geography. *One Hundred Years of Vegetation Succession in the Easton Glacial Foreland, Mount Baker, Washington*. Member.
- 2016 Jamis Bruening, Environmental Science. *Fine-scale topoclimate modeling and climatic treeline prediction of Great Basin bristlecone pine (*Pinus longaeva*) in the American Southwest*. Member.