

General Biographical Information

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Academic Background

Ph.D.	Institute of Limnology, Uppsala University	1990
M.Sc.	Zoology - University of Maine	1985
B.Sc.	Fisheries - Humboldt State University	1983

Professional History

Professor, Department of Civil & Environmental Engineering, University of Washington, Seattle, 2008-present.

Associate Professor, Department of Civil & Environmental Engineering, University of Washington, Seattle, 2001-2008.

Assistant Professor, Department of Civil & Environmental Engineering, University of Washington, Seattle, 1997-2001.

Research Associate, Department of Environmental Science & Policy, University of California, Davis, 1994-1997.

Postdoctoral Fellow, Department of Environmental Science & Policy, University of California, Davis, 1991-1994.

Refereed Journal Publications (bold indicates this author was my graduate student)

71. Galloway, A.W.E, M.E. Eisenlord, M.N. Dethier, G.W. Holtgrieve, M.T. Brett. 2014. Quantitative estimates of resource utilization by an herbivorous isopod using a Bayesian fatty acid mixing model. *Marine Ecology Progress Series* (in press).
70. Galloway, A.W.E., S.J. Taipale, **M. Hiltunen**, E. Peltomaad, **U. Strandberg**, M.T. Brett, and P. Kankaala 2014. Diet specific biomarkers show that high quality phytoplankton fuel herbivorous zooplankton in large boreal lakes. *Freshwater Biology* (in press).
69. Brett, M.T. 2014. Are phytoplankton in northern Swedish lakes extremely ¹³C depleted? (comment to Karlsson et al. 2012). *Limnology and Oceanography* (in press).
68. **Strandberg, U.**, Taipale, S.J., Kainz, M.J., & Brett, M.T. (2014). Retroconversion of

- Docosapentaenoic Acid (n-6): an Alternative Pathway for Biosynthesis of Arachidonic Acid in *Daphnia magna*. *Lipids* 49:591-595.
67. Taipale, S.J., M.T. Brett, M.W. Hahn, D. Martin-Creuzburg, S. Yeung, **M. Hiltunen, U. Strandberg**, and P. Kankaala. 2013. Differing *Daphnia magna* assimilation efficiencies for terrestrial, bacterial and algal carbon and fatty acids. *Ecology* 95: 563-576.
 66. Taipale, S.J., **Strandberg, U.**, Peltomaa, E., Galloway, A.W., Ojala, A., & Brett, M.T. (2013). Fatty acid composition as biomarkers of freshwater microalgae: analysis of 37 strains of microalgae in 22 genera and in seven classes. *Aquatic Microbial Ecology* 71: 165-178.
 65. **Li, B.**, M.T. Brett. 2013. The influence of dissolved phosphorus molecular form on recalcitrance and bioavailability. *Environmental Pollution* 182: 37-44.
 64. Perhar, G., G.B. Arhonditsis, and M.T. Brett. 2013. Modeling zooplankton growth in Lake Washington: A mechanistic approach to physiology in a eutrophication model. *Ecological Modelling* 258: 101-121.
 63. Perhar, G., G.B. Arhonditsis, and M.T. Brett. 2013. Modelling the role of highly unsaturated fatty acids in planktonic food web processes: Sensitivity analysis and examination of contemporary hypotheses. *Ecological Informatics* 13: 77-98.
 62. **Ravet, J.L., J. Persson**, and M.T. Brett. 2012. Threshold dietary polyunsaturated fatty acid concentrations for *Daphnia pulex* growth and reproduction. *Inland Waters* 2: 199-209.
 61. Taipale, S.J., M.T. Brett, K. Pulkkinen, M.J. Kainz. 2012. The influence of bacteria-dominated diets on *Daphnia magna* somatic growth, reproduction, and lipid composition. *FEMS Microbiology Ecology* 82: 50-62.
 60. Galloway, A.W.E., K.H. Britton-Simmons, D.O. Duggins, P.W. Gabrielson, and M.T. Brett. 2012. Fatty acid signatures differentiate marine macrophytes at ordinal and family ranks. *Journal of Phycology* 48: 956-965.
 59. Brett, M.T., G.B. Arhonditsis, S. Chandra, and M.J. Kainz. 2012. Mass flux calculations show strong allochthonous support of freshwater zooplankton production is unlikely. *PLoS ONE* 7: Article Number: e39508.
 58. **Li, B.**, M.T. Brett. 2012. The impact of alum based advanced nutrient removal processes on phosphorus bioavailability. *Water Research* 46: 837-844.
 57. Perhar, G., G.B. Arhonditsis, and M.T. Brett, 2012. Modelling the role of highly unsaturated fatty acids in planktonic food web processes: a mechanistic approach. *Environmental Reviews* 20: 155-172.
 56. Taipale, S.J., M.J. Kainz, and M.T. Brett. 2011. Diet-switching experiments show rapid accumulation and preferential retention of highly unsaturated fatty acids in *Daphnia*. *Oikos* 120:

1674-1682.

55. Maranto, C., J.K. Parrish, D.P. Herman, A.E. Punt, J.D. Olden, M.T. Brett, D. Roby. 2011. The use of fatty acid analysis to determine species dispersal: Caspian terns in the Columbia River basin. *Conservation Biology* 25: 736-746.
54. Burns, C.W., M.T. Brett, and M. Schallenberg. 2011. A comparison of the trophic transfer of fatty acids in freshwater plankton by cladocerans and calanoid copepods. *Freshwater Biology* 56: 889-903.
53. **Steinberg, P.D.**, M.T. Brett, J.S. Bechtold, J.E. Richey, L.E. Porensky, and **S.N. Osborne**. 2011. The influence of watershed characteristics on nitrogen export to and marine fate in Hood Canal, Washington, USA. *Biogeochemistry* 106: 415-433.
52. **Ravet, J.L.**, M.T. Brett, and G.B. Arhonditsis. 2010. The effects of seston lipids on zooplankton fatty acid composition in Lake Washington. *Ecology* 91: 180-190.
51. Brett, M.T. 2010. Is a low EPA growth saturation threshold supported by the data presented in Becker and Boersma (2005)? *Limnology and Oceanography* 55: 455-458.
50. Cheng, V., G.B. Arhonditsis, and M.T. Brett. 2010. A revaluation of lake-phosphorus loading models using a Bayesian hierarchical framework. *Ecological Research* 25: 59-76.
49. Brett, M.T., M.J. Kainz, S.J. Taipale, and **H. Seshan**. 2009. Phytoplankton, not allochthonous carbon, sustains herbivorous zooplankton production. *Proc. Nat. Acad. Sci. USA* 106: 21197-21201.
48. **Dugopolski, R.A.**, E. Rydin, and M.T. Brett. 2008. Short-term effects of a buffered aluminum sulfate treatment on Green Lake sediment phosphorus speciation. *Lake and Reservoir Management* 24: 181-189.
47. Brett, M.T. and M.M. Benjamin. 2008. A reassessment of lake phosphorus retention and the nutrient loading concept in limnology. *Freshwater Biology* 53: 194-211.
46. **Persson, J.**, M.T. Brett, T. Vrede, and **J.L. Ravet**. 2007. Food quantity and quality regulation of trophic transfer between primary producers and a keystone grazer (*Daphnia*) in pelagic freshwater food webs. *Oikos* 116: 1152-1163.
45. **Dainelsdottir, M.**, M.T. Brett, and G.B. Arhonditsis. 2007. Phytoplankton food quality control of planktonic food web processes. *Hydrobiologia* 589: 29-41.
44. **Ravet, J.L.**, and M.T. Brett. 2006. Essential fatty acid and phytoplankton phosphorus content constraints on *Daphnia* somatic growth and reproduction. *Limnology and Oceanography* 51: 2438-2452.
43. Brett, M.T., D.C. Müller-Navarra, **A.P. Ballantyne**, **J.L. Ravet** and C.R. Goldman. 2006. *Daphnia* fatty acid composition reflects that of their diet. *Limnology and Oceanography* 51: 2428-2437.

42. **Ellison, M.E.**, and M.T. Brett. 2006. Particulate phosphorus bioavailability as a function of stream flow and land cover. *Water Research* 40: 1258-1268.
41. Arhonditsis, G.B. and M.T. Brett. 2005. Eutrophication model for Lake Washington (USA), Part I- Model description and sensitivity analysis. *Ecological Modelling* 187: 140-178.
40. Arhonditsis, G.B. and M.T. Brett. 2005. Eutrophication model for Lake Washington (USA), Part II- Model calibration and validation. *Ecological Modelling* 187: 179-200.
39. Brett, M.T., G.B. Arhonditsis, **S.E. Mueller**, D.M. Hartley, J.D. Frodge, and D.E. Funke. 2005. Non-point source nutrient impacts on stream nutrient and sediment concentrations along a forest to urban gradient. *Environmental Management* 35: 330-342.
38. Brett, M.T., **S.E., Mueller**, and G.B. Arhonditsis. 2005. A daily time series analysis of stream water phosphorus transport along an urban to forest gradient in the Seattle area. *Environmental Management* 35: 56-71.
37. Arhonditsis, G.B., Winder, M., Brett, M.T. and Schindler, D.E. 2004. Patterns and mechanisms of phytoplankton variability in Lake Washington (USA). *Water Research* 38: 4013-4027.
36. **Nickel, D.K.**, M.T. Brett, and A.D. Jassby. 2004. Factors Regulating Shasta Lake (California) Cold Water Accumulation, a Resource for Endangered Salmon Conservation. *Water Resources Research* 40: W05204, doi:10.1029/2003WR002669.
35. Arhonditsis, G.B., and M.T. Brett. 2004. Evaluation of the current state of mechanistic aquatic biogeochemical modeling. Where are we? *Marine Ecology Progress Series* 271: 13-26.
34. Park, S.-K., M.T. Brett, Müller-Solger, A., and C.R. Goldman. 2004. Climatic forcing and primary productivity in a subalpine lake: interannual variability as a natural experiment. *Limnology and Oceanography* 49: 614-619.
33. Brett, M.T. 2004. When is a correlation between ratios “spurious”? *Oikos* 105: 647-656.
32. Müller-Navarra, D.C., M.T. Brett, S.-K. Park, S. Chandra, **A.P. Ballantyne**, E. Zorita, and C.R. Goldman. 2004. Unsaturated fatty acid content in seston and tropho-dynamic coupling in lakes. *Nature* 427: 69-72.
31. Arhonditsis, G.B., M.T. Brett, C.L. DeGasperi and D.E. Schindler. 2004. Effects of climatic variability on the thermal properties of Lake Washington (USA). *Limnology and Oceanography* 49: 256-270.
30. Park, S.-K., M.T. Brett, D.C. Müller-Navarra, S.-C. Shin, A.M. Liston and C.R. Goldman. 2003. Heterotrophic nanoflagellates enhance the food quality of decaying *Microcystis* by upgrading essential fatty acids. *Aquatic Microbial Ecology* 33: 201-205.

29. **Ravet, J.L.**, M.T. Brett, D.C. Müller-Navarra. 2003. A test of the role of polyunsaturated fatty acids in phytoplankton food quality for *Daphnia* using liposome supplementation. *Limnology and Oceanography* 48: 1938-1947.
28. Arhonditsis, G.B., M.T. Brett, and J.D. Frodge. 2003. Environmental control and limnological impacts of a large recurrent spring bloom in Lake Washington, USA. *Environmental Management* 31: 603-618.
27. Park, S.-K. , M.T. Brett, E. T. Oshel and C.R. Goldman. 2003. Seston food quality and *Daphnia* production efficiencies in an oligo-mesotrophic subalpine lake. *Aquatic Ecology* 37: 123-136.
26. **Ballantyne, A.P.**, M.T. Brett and D.E. Schindler. 2003. The importance of dietary phosphorus and highly unsaturated fatty acids for sockeye (*Oncorhynchus nerka*) growth in Lake Washington- a bioenergetics approach. *Canadian Journal of Fisheries and Aquatic Science* 60: 12-22.
25. Park, S.-K., M.T. Brett, D.C. Müller-Navarra and C.R. Goldman. 2002. Essential fatty acid content and the phosphorus to carbon ratio in cultured algae as indicators of food quality for *Daphnia*. *Freshwater Biology* 47: 1377-1390.
24. Higley, H.J. Carrick, M.T. Brett, C. Luecke, C.R. Goldman. 2001. The effects of ultraviolet radiation and nutrient additions on periphyton biomass and composition in a sub-alpine lake (Castle Lake, USA). *Internat. Rev. Hydrobiol.* 86: 147-163.
23. Brett, M.T., D. Müller-Navarra, and S.-K. Park. 2000. Empirical analysis of mineral P limitation's impact on algal food quality for freshwater zooplankton. *Limnology and Oceanography* 45: 1564-1575.
22. Müller-Navarra, D.C., M.T. Brett, A. Liston and C.R. Goldman. 2000. A highly-unsaturated fatty acid predicts biomass transfer between primary producers and consumers. *Nature* 403: 74-77.
21. Brett, M.T., F.S. Lubnow, M. Villar-Argaiz, C.R. Goldman and A. Müller-Solger. 1999. Nutrient control of bacterioplankton and phytoplankton dynamics. *Aquatic Ecology* 33: 135-145.
20. Huovinen, P.S., M.T. Brett, and C.R. Goldman, C.R. 1999. Temporal and vertical dynamics of phytoplankton net growth in Castle Lake, California. *Journal of Plankton Research* 21: 373-385.
19. Brett, M.T., and C.R. Goldman. 1997. Consumer versus resource control in freshwater pelagic food-webs. *Science* 275: 384-386.
18. Brett, M.T., and D.C. Müller-Navarra. 1997. The role of essential fatty acids in aquatic food web processes. *Freshwater Biology* 38: 483-499.
17. Turek, S. and M.T. Brett. 1997. Comment: Trout mortality from baited barbed and barbless hooks (and reply). *North American Journal of Fisheries Management* 17: 807.
16. Müller-Solger, A., M.T. Brett, C. Luecke, J.J. Elser and C.R. Goldman. 1997. The effects of golden

- shiners on plankton community structure in Castle Lake, California. *Journal of Plankton Research* 19: 1815-1828.
15. Brett, M.T., and C.R. Goldman. 1996. A meta-analysis of the freshwater trophic cascade. *Proceedings of the National Academy of Sciences, USA* 93: 7723-7726.
 14. Brett, M.T., C.R. Goldman, F.S. Lubnow, A. Bracher, D. Brandt, O. Brandt, A. Müller-Solger. 1995. Effects of a major soil fumigant spill on the planktonic ecosystem of Shasta Lake, California. *Canadian Journal Fisheries and Aquatic Sciences* 52: 1247-1256.
 13. Elser, J.J., F.S. Lubnow, E.R. Marzolf, M.T. Brett, G. Dion, and C.R. Goldman. 1995. Factors associated with interannual and intraannual variation in nutrient limitation of phytoplankton growth in Castle Lake, California. *Canadian Journal of Fisheries and Aquatic Sciences* 52: 93-104.
 12. Elser, J.J., C. Luecke, M.T. Brett, and C.R. Goldman. 1995. Effects of food-web compensation after manipulation of rainbow trout in an oligotrophic lake. *Ecology* 76: 52-69.
 11. Brett, M.T., K. Wiackowski, F.S. Lubnow, A. Müller-Solger, J.J. Elser and C.R. Goldman. 1994. Species-dependent effects of zooplankton on planktonic ecosystem processes in Castle Lake, California. *Ecology* 75: 2243-2254.
 10. Wiackowski, K., M.T. Brett, and C.R. Goldman. 1994. Differential effects of zooplankton species on ciliate community structure. *Limnology and Oceanography* 39: 486-492.
 9. Brett, M.T. 1993. Comment on "Possibility of N or P limitation for planktonic cladocerans: An experimental test" (Urabe and Watanabe) and "Nutrient element limitation of zooplankton production" (Hessen). *Limnology and Oceanography* 38: 1333-1337.
 8. Brett, M.T. 1993. Resource quality effects on *Daphnia longispina* maternal and neonate fitness. *Journal of Plankton Research* 15: 403-412.
 7. Brett, M.T., L. Martin, and T.J. Kawecki. 1992. An experimental test of the egg-ratio method: estimated versus observed death rates. *Freshwater Biology* 28: 237-248.
 6. Brett, M.T. 1992. *Chaoborus* and fish mediated influences on *Daphnia longispina* population structure, dynamics, and life history strategies. *Oecologia* 89: 69-77.
 5. Lundstedt, L., and M.T. Brett. 1991. Differential growth rates of three cladoceran species in response to mono- and mixed-algal diets. *Limnology and Oceanography* 36: 159-165.
 4. Ahlgren, G., L. Lundstedt, M. Brett, and C. Forsberg. 1990. Lipid composition and food quality of some freshwater phytoplankton for cladoceran zooplankters. *Journal of Plankton Research* 12: 809-818.
 3. Brett, M.T. 1989. Zooplankton communities and acidification processes - A review. *Water, Air, and Soil Pollution* 44: 387-414.

2. Brett, M.T. 1989. The distribution of free-swimming macroinvertebrates in acidic lakes of Maine: the role of fish predation. *Aqua Fennica* 19: 113-118.
1. Brett, M.T. 1989. The rotifer communities of acid-stressed lakes of Maine. *Hydrobiologia* 186/187: 181-190.

Books and Book Chapters

Arts, M.T., M.T. Brett, and M. Kainz. 2009. *Lipids in Aquatic Ecosystems*. Springer, New York.

Brett, M.T., D.C. Müller-Navarra. and **J. Persson**. 2009. Crustacean Zooplankton Fatty Acid Composition. Pages 115-146 in Chapter 6 in M.T. Arts, M.T. Brett, and M. Kainz, editors. *Lipids in Aquatic Ecosystems*. Springer, New York.

Non-Refereed Publications

Brett, M.T. 2010. Book Review of "The biogeochemistry of Mirror Lake and its watershed. By Winter, Thomas C., and Gene E. Likens, editors. 2009. *Freshwater Ecology Series*. The University of California Press, Berkeley, California. 361 p.

Brett, M.T., L. Brouwer, and L.A. Brett. 1999. Research productivity and reputational ratings at US Ecology, Evolution and Behavior Programs. *Bulletin of Ecological Society of America* 80: 250-256.

Brett, M.T. 1997. Meta-analysis in ecology. *Bulletin of the Ecological Society of America* 78: 92-94.

Project Reports (reports to sponsors)

Bo Li, B., M.T. Brett. 2011. Spokane regional wastewater Phosphorus Bio-availability Study Final Report. Prepared for the Washington State Department of Ecology and Spokane County.

Atieh, B.G., J.D. Horowitz, G.R. Leque, M.M Benjamin and M.T. Brett. 2008. Hood Canal Onsite Sewage System Nitrogen Loading Project: Year 2 Final Report. Report to the Puget Sound Partnership

Julie Horowitz, J., B. Atieh, G. Leque, M.M. Benjamin, and M.T. Brett. 2007. Hood Canal Onsite Septic System Nitrogen Loading Project: Phase I Final Report. Prepared for the Puget Sound Partnership.

Brett, M.T, C. Sarsfield, J. DeStaso, S. Duffy, and A. C. Heyvaert. 1998. Physical Forcing of Phytoplankton Bloom Dynamics in Shasta Lake, California: A Progress Report on the Study of Limnological Effects Following Installation of a Temperature Control Device. Report to the US Bureau of Reclamation.

Brett, M.T., and J.E. Reuter. 1997. An Analysis of the Pyramid Lake Lahontan Cutthroat Trout Nose-Tag Data Base. Report to Pyramid Lake Fisheries, Pyramid Lake Paiute Tribe.

Brett, M.T., C.R. Goldman, and S. Ayers. 1994. A limnological investigation of Whiskeytown

Reservoir: potential impacts of temperature control curtains. Report to the US Bureau of Reclamation.

Brett, M.T., and C.R. Goldman. 1994. Crayfish population size and recolonization potential in the upper Sacramento River following the Cantara Vapam[®] spill, Report of 1993 field sampling. Report to the California Department of Fish and Game.

Brett, M.T., and C.R. Goldman. 1993. Crayfish population size and recolonization potential in the upper Sacramento River following the Cantara Vapam[®] spill. Report to the California Department of Fish and Game.

Brett, M.T., C.R. Goldman, and F.S. Lubnow. 1992. Effects of the Cantara Vapam[®] spill on the planktonic ecosystem of Shasta Lake. Report to the California Department of Fish and Game.

Other Research-Related Activities

Brett, M.T. 1998. Angling Mortality, Special Regulations and the Secret to Maintaining Quality Fisheries. Fly Fisherman, page 18-30, Feb. 1998 issue.

Brett, M.T. 1995. Castle Lake has record clarity. Mt. Shasta Herald. July 19, 1995.

Brett, M.T. 1994. Ongoing study keeps track of health of Castle Lake. The Dunsmuir News. Nov. 9, 1994.

Brett, M.T., et al. 1994. Cui-ui and ignorance. California Flyfisher July-August: 48-50. An article on a conflict over conserving an endangered nongame fish versus preserving a sport fishery.

Brett, M.T., et al. 1993. Welcome to Castle Lake. Interpretive brochure describing the natural history, aquatic ecology, and ongoing limnological research at Castle Lake, site of the University of California, Davis Limnological Research Station.