



Dr. Joanna Mills Flemming Biography

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Dr. Joanna Mills Flemming is a statistical ecologist and Professor in the Department of Mathematics & Statistics at **Dalhousie University**. She is the Regional Director of CANSSI Atlantic (the Atlantic node of the Canadian Statistical Sciences Institute) and founder of the Statistical Ecology at Dalhousie Lab (SEaDAL). She is also co-leading the development of a Centre of Excellence in Fisheries Science, an interdisciplinary initiative integrating quantitative science, ecology, genetics, and management to advance sustainable fisheries.

Dr. Flemming teaches graduate courses in data analysis and contributes to interdisciplinary training programs spanning fisheries science, genomics, and epidemiology. She is deeply committed to HQP development, mentoring students across undergraduate, MSc, PhD, and postdoctoral levels, and building inclusive training pathways in quantitative marine science.

Research in Dr. Flemming's lab focuses on the development of advanced statistical methodologies for ecological data exhibiting spatial and temporal dependence. Her work is motivated by real-world management questions: How can we infer animal behaviour from imperfect tracking data? How can we reliably estimate abundance, biomass, and demographic structure in exploited or conservation-relevant populations? How can we integrate diverse data streams: genetic; survey; movement; and environmental data, into coherent population models that inform sustainable management?

Her research spans close-kin mark-recapture (CKMR), spatiotemporal population dynamics, state-space models, step-selection functions, and emerging genomic tools such as epigenetic aging clocks. Applications include Atlantic halibut, grey seals, scallops, Atlantic cod, and other commercially and ecologically important marine species. A central theme of her work is bridging statistical innovation with applied fisheries science to support evidence-based policy and long-term ocean sustainability.

Dr. Flemming collaborates extensively with federal scientists at Fisheries and Oceans Canada, industry partners, Indigenous organizations, and international leaders in quantitative fisheries science. Her work integrates methodological innovation with practical implementation, ensuring that advances in statistical science translate into improved conservation outcomes and sustainable fisheries management.