Seb Dalgarno

Intermediate Computational Biologist

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Background

Seb Dalgarno RPBio is a computational biologist with Poisson Consulting specializing in Bayesian analysis, software development and Shiny app development. Seb is a reviewer for the Journal of Open Source Software, (co)developer of over 20 R packages, maintainer of 7 R packages, and developer of over 20 Shiny apps. Seb has analytical experience in fish population ecology and forest ecology.

Education

2014	MSc in Geography	*University of Guelph*
2006	BSc in Forest Conservation	*University of Toronto*

Career

2020	Intermediate Computational Biologist	*Poisson Consulting*
2017	Junior Computational Biologist	*Poisson Consulting*
2016	GIS Analyst	*Self-Employed*
2012	Research Intern	*Wildlife Conversation Society*

Example Projects

Okanagan Lake kokanee spawning (2023)

Developed Bayesian models to estimate spawn timing of kokanee in tributaries of Okanagan Lake, predict historic lake temperature, and evaluate influence of environmental variables including water temperature (accumulated thermal units) and forest disturbance.

Lower Columbia River fish stranding (2022 - ongoing)

Developed a Bayesian model to estimate fish stranding at sites following discharge reduction events and a Shiny app to provide model predictions and make recommendations for salvage operations.

Quesnel Lake exploitation (2021 - 2023)

Developed a Bayesian state-space, individual-based, Cormack-Jolly-Seber survival model to estimate rainbow trout recapture probability, natural mortality, spawning probability and abundance from acoustic telemetry and reward tag data.

Boreal caribou population growth (2022 - 2024)

Developed R packages to fit models to estimate boreal caribou survival, recruitment and population growth in Bayesian and Maximum Likelihood frameworks and simulate boreal caribou survival and recruitment data from stage-based population model.

Key Software

- bboutools - R package to estimate boreal caribou population growth using Bayesian and Maximum Likelihood models.
- fwapgr - R package to query the Freshwater Atlas (FWA) of British Columbia (BC) via the fwapg API.

- detrange - R package to estimate the detection range of acoustic telemetry receivers using Bayesian models.
- shinyssdtools - Shiny app used by BC and international governments to derive water quality guidelines.

Key Publications

1. Dalgarno, S. (2021). Shinyssdtools: A web application for fitting species sensitivity distributions (SSDs). *Journal of Open Source Software*, *6*(57), 2848. https://doi.org/10.21105/joss.02848
2. Thompson, M., Alderman, S., Wilson, K., Dalgarno, S., Thorley, J., Gavin, S., & Dersch, A. (2020). *Trans Mountain Expansion Project and Oil Spills: Power Analysis on Pacific Salmon Data* [A {Management} and {Solutions} in {Environment} {Science} {Report}]. Adams Lake Indian Band.
3. Dalgarno, S., Mersey, J. E., Gedalof, Z., & Lemon, M. (2017). Species-environment associations and predicted distribution of Black Oystercatcher breeding pairs in Haida Gwaii, British Columbia, Canada. *Avian Conservation and Ecology*, *12*(2). https://doi.org/10.5751/ACE-01094-120209
4. Arihafa, A., Dalgarno, S., & Neale, E. (2015). An estimate of above-ground carbon stock in tropical rainforest on Manus Island, Papua New Guinea. *Pacific Conservation Biology*, *21*(4), 307. https://doi.org/10.1071/PC15015