

Brian K. Hand

Current Appointment (2014 – present):

January 2016

Postdoctoral Research Associate
Flathead Lake University of Montana
The University of Montana
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Birth/Family: Born 29 February, 1980; Missoula, MT, USA. Married with three great kids.

Research statement: I am passionate about creating software tools to address novel questions in conservation and ecology that are challenging to address because of time, money, and feasibility constraints. As a Montana native, conservation is an important part of my work. I strive to create the necessary tools to not only answer theoretical questions in conservation, but practical ones and with the ability to predict future outcomes for the problems of today.

Professional Preparation

2013. Ph.D. University of Montana (Computation Biology; NSF-IGERT fellowship)

2010. M.Sc. University of Montana (Computer Science)

2004. B.Sc. University of Montana (Physics and Astronomy)

2004. Minor degree in English (Creative Writing)

Past Appointments

2011-2013 Research Assistant, Flathead Biological Station, Dr. Gordon Luikart, U. of Montana

2011-2012 Research Assistant, Div. of Biological Sciences, Dr. Erin Landguth, U. of Montana

2009-2011 NSF IGERT Fellow, Ecology of Infectious Diseases, U. of Montana

2008-2009 Research Assistant, Computer Science Dept., Dr. Jesse Johnson, U. of Montana

Awards

Montana Institute of the Ecosystems Fellowship, 2012

MEID Interdisciplinary IGERT Graduate Research Traineeship, University of Montana, 2009

Watkins Scholarship, University of Montana, 2003

Publications (in peer reviewed journals - chronological) (*students)

2015

Hand BK, Kovach RP, Muhlfeld CC, Wade AA, Whited DC, Narum SR, Matala AP, Kimble JS, *Garner BA, Stanford J, Luikart G. (In Press) Climate Variables Explain Genetic Differentiation in a Threatened Species: Replication and Uncertainty Assessment Highlights Important Differences between Steelhead Metapopulations. *Molecular Ecology*

*Garner BA, **Hand BK**, et al. (In Press) Genomics in conservation: case studies and bridging the gap between data and application. *Trends in Ecology and Evolution*.

Hand BK, *Hether TD, Hohenlohe PA, Kovach RP, Muhlfeld CC, Amish SJ, Boyer M, Miller MR, Lowe WH, Allendorf FW, Luikart G. (2015) Genomics of introgression in hybridized populations: discovery and mapping thousands of species-diagnostic SNPs by RAD next generation sequencing. *Current Zoology*, 61, 146-154.

Hand BK, Lowe WH, Kovach RP, Muhlfeld CC, Luikart G. (2015) Landscape community genomics: understanding eco-evolutionary processes in complex environments. *Trends in Ecology and Evolution*. Doi:10.1016/j.tree.2015.01.005

Kovach RP, Muhlfeld CC, **Hand BK**, Whited DC, Wade AA, DeHaan P, Luikart G. (2015) Climatic and habitat variation is related to genetic diversity in bull trout: implications for vulnerability to climate change. *Global Change Biology*. DOI: 10.1111/gcb.12850

2014

Andrews K, Hohenlohe PA, Miller MR, **Hand BK**, Seeb J, Luikart G. (2014) Trade-offs and utility of alternative RADseq methods. *Molecular Ecology*.

Hand BK, Chen S, Anderson N, Beja-Pereira A, Cross PC, Ebinger M, Edwards H, Garrott RA, Kardos M, Kauffman M, Landguth EL, Middleton A, Schwartz M, Scurlock B, White PJ, Zager P, Luikart G (2014) Limited maternal gene flow among elk herds in the Greater Yellowstone Ecosystem revealed by mtDNA. *Journal of Fish and Wildlife Management*. 5, 124-131.

Hand BK, Cushman SA, Landguth EL, & Lucotch J (2014). Assessing multi-taxa sensitivity to the human footprint, habitat fragmentation and loss by exploring alternative scenarios of dispersal ability and population size: a simulation approach. *Biodiversity and Conservation*. doi:10.1007/s10531-014-0747-x

2012

Landguth EL, **Hand BK**, Glassy J, Cushman SA, Sawaya MA (2012) UNICOR: a species connectivity and corridor network simulator. *Ecography*, 35, 9–14.

Publications in prep or review.

Hand BK, Raiford DW, Landguth EL, Glassy J GARM: A machine learning algorithm for creating resistance maps in landscape genetics. In prep.

Hand BK, Raiford DW, Lowe WH, Cross PC, Anderson NJ, Chen S, Luikart G. Confronting uncertainty in landscape genetics: a case study of elk connectivity in the Greater Yellowstone Ecosystem. In Review.

Wade AA, **Hand BK**, Muhlfeld CC, Kovach RP, Whited DC, Luikart G. Assessing species vulnerability to climate change: accounting for adaptive capacity and uncertainty in an assessment of Columbia River salmonids. In Review.

Kovach RP, **Hand BK**, Hohenlohe PA, Boyer M, Muhlfeld CC, Amish SJ, Carim K, Lowe WH, Allendorf F, Luikart G. Patterns of genome-wide admixture across an invasive hybrid zone. In Prep.

Wade AA, **Hand BK**, Kovach RP, Muhlfeld CC, Waples R, Luikart G. Assessments of species' vulnerability to climate change: from pseudo to science. In Prep.

Ackerman MW, **Hand BK**, Waples RK, Luikart G, Waples RP, Steele C, Garner BA, McCane J, Vu N, Campbell M. Effective number of breeders estimated from sibship reconstruction: empirical

evaluations using captive populations. In Prep.

Presentations

Hand BK, Devlin S, Crabtree R, Flint C, McKee A, Frissell C, Stanford J (2015) “Natural and cultural interactions in the Columbia River Basin”. MtnSEON Annual Meeting. University of Montana, Missoula, Montana, October 2015. – *Invited Talk*

Hand BK, (2015) “Use of Genetic and Genomic Tools in Ecology”. Flathead Lake Biological Station Summer Seminar Series. Flathead Lake Biological Station, Polson, Montana. June 2015.

Hand BK, Luikart G (2015) “Projecting Effects of Climate Change on River Habitats and Salmonid Fishes: Integrating Remote Sensing, Genomics, and Demography to Inform Conservation” 2015 NASA Carbon Cycle & Ecosystems Joint Science Workshop- Terrestrial Ecology Meeting. College Park, Maryland. April 2015 – *Invited Talk*.

Hand BK, Luikart G, Muhlfeld CC (2014) “A metapopulation studying using riverscape genetics models for salmonids across Pacific Northwest”, Montana Chapter of the American Fisheries Society, Chico Hotsprings, Montana, March 2014.

Luikart G, Schwartz MK, Kardos M, **Hand BK** (2014) “The expanding role of genomics in conservation”, Annual meeting of the Western Division of the Wildlife Society, Boise Idaho, March 2014.

Hand BK, Landguth EL. and Raiford, D. “GARM – A Genetic Algorithm for Resistance Map creation for the study of species connectivity and gene flow”, ICCB 2011: Engaging Society in Conservation, Auckland, New Zealand, December 7th 2011.

Hand BK, and Landguth EL. "Quantifying the Lag Time to Detect Barriers in Landscape Genetics", IUFRO Landscape Ecology Working Group International Conference, Braganca, Portugal, September 22nd, 2010

Johnson JV, Bocek T, **Hand BK**, Granzow G., "The best of prophets of the future is the past. Or is it the present?", Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract C23B-0502

Hand BK, "CCD Imaging of Variable Red-Giant Stars", UMCUR Poster Presentation, University of Montana, December 2004

Workshops Taught

CONGEN Landscape genetics, Flathead Lake Biological Station, MT. September 2013, 2015