

Curriculum vitae

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Kevin Keenan

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- Twitter: https://twitter.com/kevinkeenan_
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- Google Scholar: <http://goo.gl/ktw44K>
- Other: <https://rpubs.com/kkeenan02>

Research interests

Evolution of life history variation • Metapopulation dynamics and the influences of life history variation • Genomics of local adaptation with gene flow • Conservation genetics • Sampling effects on population genetics inferences • Population structure • Salmonids • Speciation • Phylogeography • Local adaptation • Computational biology • Bioinformatics

Laboratory Skills

- DNA extraction and purification techniques
- Multiplex PCR (Licor DNA analyzer and ABI 3730 xl)
- STR primer design
- STR genotyping
- Sanger DNA sequencing
- mtDNA-RFLP analysis
- Electro-fishing

Computational Skills

- R programming (advanced; incl. Package development, Parallel computation)
- C++ programming (beginner-intermediate)
- Python programming (intermediate)
- Version control (Git + Github)
- HTML (beginner-intermediate)
- LaTeX (advanced)
- Markdown
- HPC (Windows + UNIX)
- Windows OS (incl. Microsoft Office suite)
- Linux OS (Bash scripting)
- Adobe Photoshop + Illustrator, Inkscape + GIMP
- GIS (ArcGIS + R GIS analyses)
- Open source, reproducible research.

Genetic analysis skills

- Standard population genetic analysis (N_e estimation, bottleneck detection, genetic differentiation etc.)
- Bayesian clustering (GUI and HPC based STRUCTURE analysis, BAPS and GENELAND)
- Multivariate clustering (MEMGENE, PCA, sPCA and DAPC)
- Outlier analysis (Lositan and BAYESCAN)
- Genetic Stock Identification (GSI; ONCOR + GENECLASS2)
- Individual assignment (ONCOR + GENECLASS)
- Gene flow analysis (MIGRATE-N + divMigrate)
- Demographic and evolutionary inference (ABC analysis; DIYABC + ABCToolbox + easyABC)
- Landscape genetics (Barrier detection, Isolation-by-distance etc.)
- Coalescent simulations (ms + simcoal2 + fastsimcoal2)
- Forward time simulations (EasyPop)
- Hierarchical clustering analysis (R packages; ape, base, phyTools etc.)
- Phylogenetic analyses (PAUP, ape, phytools, phylip + Rphylip etc.)
- DNA sequence alignment

Education

2009 - Present - Ph.D Conservation Genetics , Queen's University, Belfast

- *Thesis advisors:* Professor Paulo A. Prodöhl & Dr. Rosaleen Hynes
- *Thesis title:* The Development and Application of Molecular and Computational Genetics Tools for the Conservation and Management of Brown Trout (*Salmo trutta* L.)

2005 - 2009 - Bsc. Hons. Zoology, Queen's University, Belfast

- *Thesis advisor:* Professor Paulo A. Prodöhl
- *Thesis title:* Genetic Stock Identification of Brown trout (*Salmo trutta* L.) in Bunaveela Lough, Ireland.

Grants and Scholarships

2011 - *University of Washington, Summer Institute in Statistical Genetics tuition scholarship*, Awarded to Kevin Keenan, \$2,750

2011 - *Queen's University, Belfast, Alan Graham Fund Travel Scholarship*, Awarded to Kevin Keenan, £800

2014 - *Department of Culture, Arts and Leisure (DCAL), Northern Ireland Assembly, Special Research Award*, Awarded to Paulo A. Prodöhl and Kevin Keenan, £30,000.

Teaching Experience

2013-present: *Instructor*, 'Summer School in Computation Biology: Statistical and Computational method to analyze high-dimensional data in Biology', Queen's University, Belfast.

2009-2014: *Teaching assistant* in MEEG: Molecular Ecology and Evolutionary Genetics

2009-2013: *Teaching assistant* in GEN105: Introduction to Genetics and Molecular Biology

2013: *Co-coordinator and Instructor*, ‘Introductory data analysis using R’ post-graduate course, Queen’s University, Belfast.

2013: *Teaching assistant*, ‘Introduction to R for geological and ecological data analysis’, Instructed by Professor Steve Juggins.

2012: *Co-supervisor* of Ms. Catherine Arrell, BSc. (Hons.), The curious case of the monomorphic trout revisited. Principal supervisor- Prof. Paulo A. Prodöhl.

Publications

K Keenan, CR Bradley, JJ Magee, RA Hynes, RJ Kennedy, WW Crozier, R Poole, TF Cross, P McGinnity and PA Prodöhl, (2013), *Beaufort trout MicroPlex: a high-throughput multiplex platform comprising 38 informative microsatellite loci for use in resident and anadromous (sea trout) brown trout Salmo trutta genetic studies*. Journal of Fish Biology, **82**:6, pp 1789-1804.

K Keenan, P McGinnity, TF Cross, WW Crozier, PA Prodöhl, (2013), *diveRsity: an R package for the estimation and exploration of population genetics parameters and their associated errors.*, Methods in Ecology and Evolution, **4**:8, pp 782-788

Tak Fung, **K Keenan**, (2014), *Confidence Intervals for Population Allele Frequencies: The General Case of Sampling from a Finite Diploid Population of Any Size*. PLoS ONE, **9**:1, e85925

Conferences and Workshops

2015: **Oral presentation** - River Maine Angling Association AGM, Ballymena, Northern Ireland, *The Role of Population Genetics in the Conservation and Management of Brown Trout (Salmo trutta)*.

2014: **Poster presentation** - 47th Population Genetics Group Meeting, University of Bath, *Improving the reproducibility of data analyses in population genetics, using the R and the diveRsity package*.

2014: **Oral presentation** - Institute of Fisheries Management symposium, Galway, Ireland, *Population and Conservation Genetics of Brown trout (Salmo trutta) in Lough Neagh, Northern Ireland*.

2014: **Oral presentation** - Lough Neagh Dollaghan trust meeting, Antrim, Northern Ireland, *Population and Conservation Genetics of Brown trout (Salmo trutta) in Lough Neagh, Northern Ireland*.

2013: **Workshop** - Introduction to Genomics, University of Sheffield.

2013: **Oral presentation** - Ecological Genetics Group, Queen’s University, Belfast, *diveRsity: An R package for the estimation and exploration of population genetics parameters and their associated errors*

2012: **Workshop** - Summer institute in Statistical Genetic, University of Washington, Modules completed; - Population Genetic Data Analysis - Computing for Statistical Genetics - Population Genetics - Introduction to QTL Mapping - Advanced QTL Mapping

2011: **Oral presentation** - 8th Annual Marine Biological Association postgraduate conference, Queen’s University, Belfast, *Microsatellite Power analyses: implications for the conservation of a large pelagic marine species*.

2010: **Oral presentation** - Beaufort Fish Population Genetics Mini-symposium, Newport, Ireland, *Population Genetics and Genetic Stock Identification of Brown trout (Salmo trutta) from Lough Bunaveela, Ireland*

2010: **Poster presentation** - Ecological Genetics Group, University of Stirling, *Brown trout (Salmo trutta) population genetics in Lough Neagh, Northern Ireland*.

Public outreach

- Diversity in Life blog (<http://diversityinlife.weebly.com/diversity-in-life-blog.html>)
- Contributor on Stack Overflow R forum (<http://stackoverflow.com/>)
- Contributor on Nature Networks Population genetics forum (discontinued; <http://network.nature.com/groups/popgen/forum/topics>)
- Contributor on BioStars R forum (<https://www.biostars.org/>)
- Twitter (https://twitter.com/kevinkeenan_)
- Public tutorials for various population genetics analyses in R (<https://rpubs.com/kkeenan02>)

Scholarly society memberships

- Fisheries society of the British Isles