Project Summary

Overview testing

Intellectual Merit

Broader Impacts

Project Description

Introduction

nicely written intro goes here

Objectives

Objective I: do this cool thing

talk about the objectives here, then list them specifically:

1. *Do ...?*
2. *Do ...?*
3. *Is there evidence of ...?*

Objective II: Determine the extent to which ...

Maize was domesticated in...

Rationale and Significance

rationale and significance

Research Plan

Assess the evolutionary role of ...

first subsection stuff

Does the potential for ...?

lots of subsection stuff

Is i...?

subsection stuff

Can a widespread species serve as ...?

subsection stuff

Potential Challenges potential challenges

Broader Impacts

stuff here

subsection

stuff

subsection

stuff

Results From Prior NSF Support

don't think I need this section

Biographical Sketch: Kimberly J. Gilbert

A. Professional Preparation

University of Virginia, USA	Biology	B.Sc.	2010
University of British Columbia, Canada	Zoology	Ph.D.	2016 (expected)

Advisor: Michael C. Whitlock

B. Publications

maybe still want to change around which pubs go in 5 most important?

Five Publications Most Closely Related to the Proposed Project

1. **Gilbert KJ**, MC Whitlock (2015) Evaluating methods for estimating local effective population size with and without migration. *Evolution*, 68(8), 2154-2166.
2. **Gilbert KJ**, MC Whitlock (2015) Q_{ST}-F_{ST} comparisons with unbalanced half-sib designs. *Molecular Ecology Resources*, 15(2), 262-267.
3. Caplins SA, **KJ Gilbert**, C Ciotir, J Roland, SF Matter, N Keyghobadi (2014) Landscape structure and the genetic effects of a population collapse. *Proceedings of the Royal Society B*. 281: 20141798; doi: 10.1098/rspb.2014.1798
4. Keller SR, **KJ Gilbert**, PD Fields, DR Taylor (2012) Bayesian inference of a complex invasion history revealed by nuclear and chloroplast genetic diversity in the colonizing plant, *Silene latifolia*. *Molecular Ecology*, 21(19), 4721-4734.
5. Whitlock MC, **KJ Gilbert** (2012) Q_{ST} in a hierarchically structured population. *Molecular Ecology Resources*, 12(3), 481–483.

Four Other Significant Publications

1. Santiso X, L Lopez, **KJ Gilbert**, R Barreiro, MC Whitlock, R Retuerto (2015) Patterns of genetic variation within and among populations in *Arbutus unedo* and its relation with selection and evolvability. *Perspectives in Plant Ecology, Evolution and Systematics*, 17(3), 185-192.
2. Vines TH, RL Andrew, DG Bock, MT Franklin, **KJ Gilbert**, NC Kane, EJ Kleynhans, J-S Moore, BT Moyers, S Renaut, DJ Rennison, T Veen, S Yeaman (2013) Mandated archiving greatly improves access to research data. *FASEB Journal*, 27(4), 1304-1308.
3. **Gilbert KJ**, RL Andrew, DG Bock, MT Franklin, NC Kane, J-S Moore, BT Moyers, S Renaut, DJ Rennison, T Veen, TH Vines (2012) Recommendations for utilizing and reporting population genetic analyses: The reproducibility of genetic clustering using the program STRUCTURE. *Molecular Ecology*, 21(20), 4925-4930.
4. Vines TH, AYK Albert, RL Andrew, F Débarre, DG Bock, MT Franklin, **KJ Gilbert**, J-S Moore, S Renaut, DJ Rennison (2014) The availability of research data declines rapidly with age. *Current Biology*, 24, 94-97.

have lots of other presentations could add, but no space

C. Select Conference Presentations (chosen from 11 presentations)

2015 Validating SNP loci underlying local adaptation in lodgepole pine; KJ Gilbert, S Yeaman, KE Lotterhos, KA Hodgins, H Suren, JA Holliday, S Nadeau, SN Aitken, MC Whitlock *Poster, 15th ESEB Congress, Lausanne, Switzerland*

2014 Evaluating methods for estimating effective population size in the presence of migration; KJ Gilbert & MC Whitlock *Oral presentation, Evolution, Raleigh, USA*

2012 Range expansion and adaptation across heterogeneous environments; KJ Gilbert & MC Whitlock *Poster, Evo-WIBO Conference (Evolutionary Biology in the Pacific*

Northwest), Port Townsend, USA

2011 Inferred invasion history of *Silene latifolia* into North America utilizing population genetic data and approximate Bayesian computation; KJ Gilbert, SR Keller, PD Fields, DR Taylor *Poster, 13th Congress of the European Society for Evolutionary Biology, Tuebingen, Germany*

D. Grants and Awards

Cordula and Gunter Paetzold Fellowship, UBC, $18,000CAD	2015 – 2016
Declined; Zoology Graduate Fellowship, UBC, $11,000CAD	2015 – 2016
Ann and William Messenger Graduate Fellowship, UBC, $700CAD	2015
Zoology Graduate Fellowship, UBC, $11,000CAD	2014 – 2015
Frieda Granot Graduate Scholarship in Interdisciplinary Research, $200CAD	2013 – 2014
Theodore E Arnold Fellowship, $7,750CAD	2013 – 2014
Patrick David Campbell Graduate Fellowship, $8,050CAD	2013 – 2014
Declined; Zoology Graduate Fellowship, UBC, $10,000CAD	2013 – 2014
BRITE Fellowship, UBC, $10,500CAD *per annum*	2011 – 2013

E. Synergistic Activities

1. **Working Groups:** Participated in the NESCent Reproducible Science Hackathon (2014), a 21-member working group aimed at developing a curriculum and workflow for teaching reproducible science to researchers of any background. Participated in the SimBank NESCent Catalysis Meeting (2014) which was a 25-member working group to create a collection of openly available simulation results to facilitate testing of statistical population genetic and phylogeographic methods.
2. **Teaching:** Teaching assistant for Fundamentals of Evolutionary Biology (Fall 2012-Spring 2013) where I taught three sections per term of 45 students each and lead discussion-based tutorials. Teaching assistant for Fundamentals of Biostatistics (Fall 2013, 2014, 2015). Taught two sections of 70 students total in 2013, and in 2014 and 2015 served as the lab coordinator for 254 and 276 students enrolled in the course, respectively, while teaching one section of 36 and 35 students respectively.
3. **Service:** Served as a Graduate Student Council Member for the American Society of Naturalists (2013-2016, chair 2015-2016). Served as the graduate student representative on the 2014 evolutionary biology CRC2 job search for the Department of Zoology, University of British Columbia. Organize the Biodiversity Research Centre's weekly evolution discussion group (2014-2016), for students, post-docs, and faculty from the departments of Zoology, Botany, Forestry, and Fisheries to discuss current papers in evolutionary biology. Reviewer for *Molecular Ecology Resources, Ecology and Evolution, Tree Genetics & Genomes*.
4. **Outreach:** Volunteer mist-netting and bird banding with local Vancouver non-profit organization Wild Research (2013-2015) where I participated in winter, spring migration, and fall migration bird monitoring at Iona Island Bird Observatory, taught volunteers proper bird handling, aging, data collection, and mist net extraction techniques, and assisted in educating public visitors to the station about the species conservation and monitoring, and the general tasks of running a banding station.

Data Management Plan

Data Types

This proposal will generate genotype and full-genome sequence data, phenotype data, analytical code, germplasm, and publications.

Data Archiving, Plan for Sharing, Public Access Policy

Genotype and Sequence Data EDIT THIS WHOLE DOCUMENT

Dissertation Summary

A major obstacle in evolutionary biology is the difficulty of population genetic inference in the face of confounding factors, such as demographic history. My dissertation work has focused on several topics related to this broader area of research:

1. Estimating effective population sizes from genetic data in the face of migration
2. Evaluating the factors related to species' abilities to locally adapt at range edges during expansion
3. Validating SNP loci under selection in lodgepole pine (*Pinus contorta*) for locally adapting to climate

talk about NE work

talk about range edge stuff

talk about adaptree stuff