Possible euc projects

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Here are a few ideas I have regarding a chapter-sized project I could do with Rose within the discovery project.

Broadly, I need one, possibly two, chapter-sized projects that I could give rise to first-author publications. My thesis is due in September 2018, so I have two years left. My interests are primarily in the landscape genomics parts of the grant, and the population genomics leading to these analyses. I feel that we don't have the technical ability to do the phenotyping parts of Project 3 yet, and I'm not willing to take the bullet that will be required to get that working (that said, Project 3 certainly interests me).

I think that I'd be a fool to continue doing only what I already know how to, just on a different system. Therefore, I'd like to take on some of the more novel (at least to me) technical parts, especially with regards to landscape genomics. Particularly I need to be stronger in the more mathematical and statistical aspects of these analyses.

***E. moluccana*, *E. albens*, *E. microcarpa* project**

This entails examining the population structure of the MOL/ALB/MIC complex, and possible further landscape genomics analysis of this complex.

Gene-tree Concordance Analysis

I'm quite interested in the idea of creating windowed "gene"-trees across *Adnataria*. I'm interested in how we can intelligently define windows to maximise the power of this analysis.

Possible experiments using the full dataset

Quantification of "species"

A recent paper on speciation proposes a framework that uses Approximate Bayesian Computation to look quantitatively at speciation through levels of divergence observed between populations and species. They find novel cryptic species.

Along the same lines, I'd like to look at molecular divergence (π) of windows across the genome, examining the within-site, within-species and inter-species patterns of diversity.

Neutral processes in *Eucalyptus* evolution/diversification

Look for "selection" in places known to be non-adaptive.