## Committee Meeting Notes

June 16, 2014

Karl Jarvis

Paul Beier and Jason Wilder present, Brett Dickson calling in, Sam Cushman absent

1. Three chapters to dissertation (updated descriptions)
   1. Simulations on the effect of road avoidance and roadkill on genetic patterns
   2. Empirical analysis of two desert kangaroo rat populations (and possibly a Merriam’s kangaroo rat population) in areas bisected by roads and pairing with simulations to infer road impacts
   3. Pairing of simulations with data sets on various wildlife species to infer road avoidance and roadkill impacts on genetic patterns
2. Simulations
   1. Initial runs
      1. Counterintuitive higher genetic diversity near road in roadkill scenario
      2. Results messier than desirable
      3. Computation time an issue
   2. Redesign, rerun for Alaska IALE meetings
      1. Setup
         1. Different shape (stretched rectangle instead of square)
         2. Less individuals (500 instead of 1000)
         3. Less dispersal, lower resistance of road
         4. Better looping
         5. Different resolution and extent to be easier values to work with
         6. Set initial allele frequencies to mean ending frequencies in long runs. Allows me to not run as many generations
      2. Results
         1. Dispersal values too high, results extremely variable among iterations under the same parameters. No general patterns.
   3. Current directions
      1. Use grid of points instead of randomly distributed points.
      2. Calibrate dispersal levels based on sensitivity analyses on IBD non-barrier scenario.
      3. Use NAU’s new high performance computing cluster (HPCC) Monsoon
      4. Evaluate usefulness of Shirk’s new sGD script written in R (slower but easier to use)
   4. Other considerations
      1. Make sure I’ve clearly defined study objectives
      2. Make progress on writing while simulating
      3. Measure distance from center of landscape, not just distance from road
      4. Divergence an important, basic population genetic measure to also use
3. Kangaroo Rats
   1. Sampling
      1. Two sites, 2km x 4km
      2. Desert K-rats at both sites, 60-90 individuals
      3. Merriams K-rats at one site, 110 individuals
   2. Primer sets for other Dipodomys species have good chance of working for both species
4. Other data sets
   1. Pronghorn – Sprague and Theimer agreed to share data
   2. Other leads
      1. French alpine newt dataset (road and rail)
      2. Black bear?
      3. Many possibilities from molecular road ecology literature
   3. Important to draft good letter, begin working on contacting authors and acquiring data sets
   4. Practicing on other data sets important beginning point to work out issues in analysis before I have K-rat data
5. Timeline
   1. Sims
      1. 07/01/14 Simulations complete
      2. 08/01/14 Complete manuscript
   2. K-Rats
      1. 07/10/14 Extractions, run tests of primers
      2. 09/01/14 German intern coming to work on molecular data
      3. 10/15/14 First round of genetic data
      4. 12/01/14 Finish generating genetic data
      5. 02/01/14 Compete analyses
      6. 04/01/14 Complete manuscript on kangaroo rat genetics
   3. Other datasets
      1. 07/01/14 Begin inquiring about and gathering datasets
      2. 08/01/14 Assess datasets, analyses on one
      3. 12/01/14 Complete manuscript on use of simulations in analyzing effect of roads on various wildlife species