Revised

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Abstract Title: Using HexSim to Link Demography and Genetics
                in Animal and Plant Simulations

Simulation models are essential for understanding the effects of
land management practices and environmental drivers, including
landscape change, shape population genetic structure and persistence
probabilities. The emerging field of eco-evolutionary modeling is
beginning to develop such analyses by linking individual-based
demographic and genetic processes together within spatially-explicit
simulation frameworks. However, the few existing tools in this
class are actually either population genetics simulators that have
been augmented with simple demographic models, or population
viability simulators with simplified genetic parameters. To have
practical value, eco-evolutionary models will have to acquire much
more demographic and genetic sophistication. Here, we introduce a
new simulation framework called HexSim that seamlessly connects a
mature demographic model to a flexible genetics toolkit. HexSim
can be used to develop eco-evolutionary population models for a wide
variety of life histories, ranging in complexity from theoretically
simple to realistic and detailed. We demonstrate how this new
modeling framework can be a powerful tool for landscape geneticists,
conservation biologists, evolutionary biologists, and others.