Open space system as an armature for urban expansion
An exploration of landscape pattern effects on wildlife movements in urban areas
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Study area and focal areas. Three sub-watersheds (MUC6) determine the study area: focal areas - urban reserves 1D, 1F, and 2A - are adjacent to City of Damascus
Study area within the Metropolitan region. The study area is located southeast of Portland's metropolitan area. Focal areas - urban reserves 1D, 1F, and 2A - are adjacent to City of Damascus (adapted from map retrieved from http://www.oregonmetro.gov).

Urban open spaces are areas in a city that provide recreational opportunities and amenities, including greenways, parks, plazas, and streets. They also provide habitats for native wildlife and movement corridors among these habitats. Open spaces are also influenced by the land uses that surround them and the road networks that connect them. The purpose of this study is to develop and apply a future scenario framework capable of investigating the capacity of different open space configurations to provide connectivity for selected wildlife species in landscapes facing urbanization. I will adopt and test spatial concepts as defined by landscape ecologists to generate urban open space scenarios. The focal area for this study is a 30-year urbanizing landscape consisting of three urban reserves (areas where urban expansion will occur for the next 30 years) in Damascus. OR, within a larger study area located in Portland's metropolitan region. The landscape ecological spatial concepts addressed here bring with them questions such as how do urban corridors of various widths contribute to connectivity for certain species? What habitat patch size is appropriate? and others. In answering these questions in an urbanizing landscape, I will also consider different land use configurations and the questions that accompany them. For example, does adjacency of different land uses influence wildlife species dispersal and if so, how? The study will focus on three species: one mammal, one bird, and one amphibian. A computer model - Envision - will be used to test and compare a large number of land use pattern scenarios, another computer model - HexSim - will be used to evaluate dispersal of each species in the existing landscape and in each future scenario. The resulting set of alternative landscape patterns will be subjected, first, to an ecological evaluation and, second, to an economic evaluation. As regions are urbanized, land use conversion has the capacity of generating wealth. The economic model will evaluate wealth produced in each scenario. The final result will situate scenario effects along ecological and economic gradients. The results are intended to be useful to planners, communities, and decision makers in helping them visualize desired futures and understand the policies that led to them.

Research Framework based on Steinitz's six-question framework for theory (I). Initially following Steinitz's framework permitted determining methods and theories to perform study. The final LUMA software interface proposed by Steinitz accompanied these questions each model aim to answer. The second column shows the equivalent phases of my research. Although my framework draws from Steinitz's, I adopt different names for my research components. This is particularly important to notice for my evaluation component (evaluation of future scenarios), which differs from his Evaluation model which I call study area patterns and processes.