# A Nova Web Application for Population Viability and Sustainable Harvesting Analyses

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# Abstract

Population viability analyses are used to assess the probability that a particular population of individuals will persist as a self-reproducing, ecologically viable entity for a specified period of time.  Such models are typically cast as Markov processes that may *inter alia* include demographic structure (e.g. age, stage, sex), ecological processes through the incorporation of density-dependent reproduction or survival functions, viability thresholds that trigger remedial interventions when breached (e.g. removal of individuals to protect environments), metapopulation structure, stocking, harvesting or translocations of the population.  These models can also be used to assess the impacts of harvesting strategies when they include population removal options.  Here we present a general Nova modeling framework that integrates all of the above features and generates distributions of outcomes through repeated simulations. The framework incorporates the most relevant ecosystem structures, including metapopulation structure with associated connectivity and movement parameters, age/stage class structure with population-specific life history data, demographic and environmental stochasticity components, and management interventions including off-take, translocation, and stocking components. The NOVA PVA model is available as a responsively configured web application that can be run locally in a browser or on high performance computing systems controlled by a browser-based dashboard.  In this talk the structure of the model will be discussed and the operation of the web application will be demonstrated.