
UNICOR: A SPECIES CONNECTIVITY AND CORRIDOR NETWORK SIMULATOR

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Maintenance of species and landscape connectivity has emerged as an urgent need in the field of conservation biology. Current gaps include quantitative and spatially-explicit predictions of current and potential future patterns of fragmentation under a range of climate change scenarios. To address this need, we introduce UNiversal CORridor network simulator (UNICOR), a species connectivity and corridor identification tool. UNICOR applies Dijkstra's shortest path algorithm to individual-based simulations and outputs can be used to designate movement corridors, identify isolated populations, and characterize zones for species persistence. The program's key features include a driver-module framework, connectivity maps with thresholding and buffering, and graph theory metrics. Through parallel-processing computational efficiency is greatly improved, allowing for larger ranges (grid dimensions of thousands) and larger populations (individuals in the thousands), whereas previous approaches are limited by prolonged computational times and poor algorithmic efficiency; restricting problem-size (range and populations), and requiring artificially subsampling of target populations.