

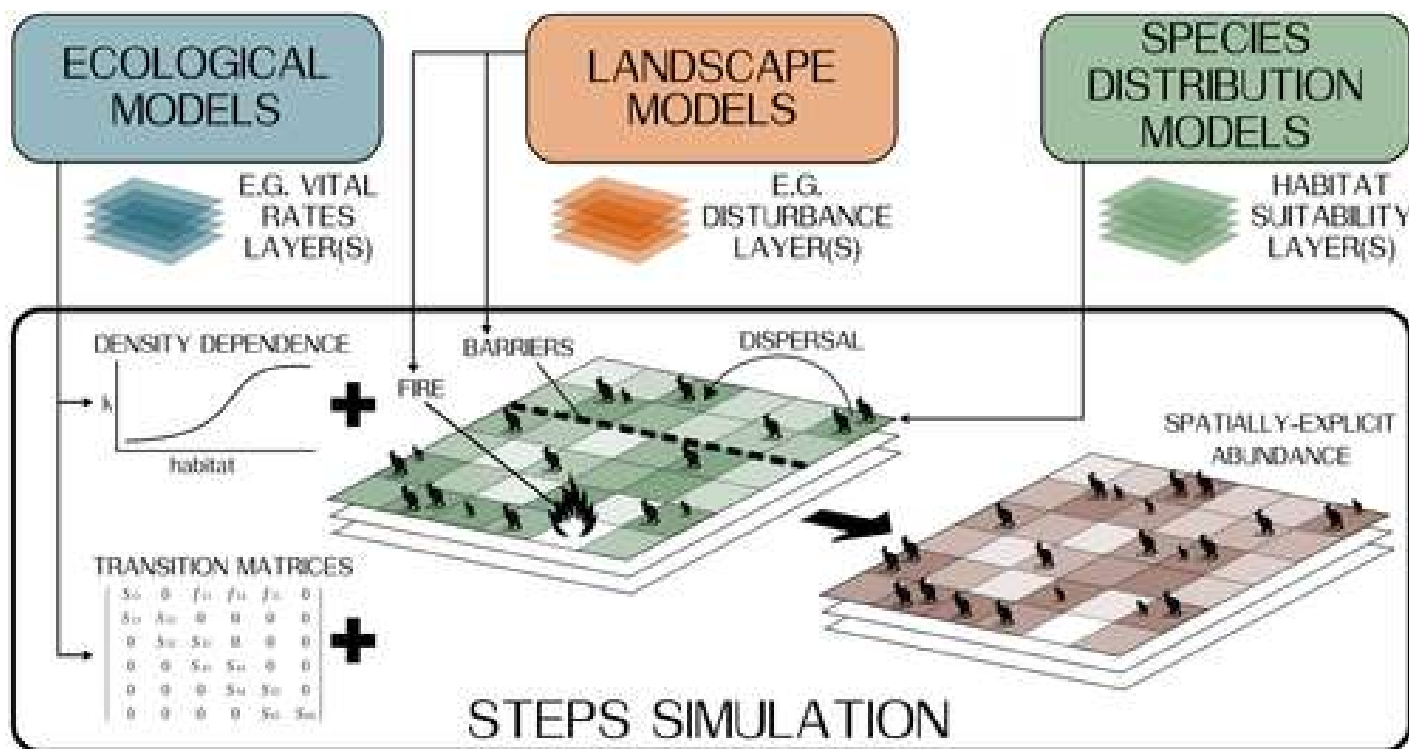
SOFTWARE SIMULATIONS AND MODELING IN ECOLOGY

Aditi Avasthi

Shyama Prasad Mukherji College

The earth consists of three spheres, the hydrosphere, lithosphere, and atmosphere. The combination and the interaction of these three spheres lead to the formation of the biosphere. The biosphere is the region of the Earth where life exists. All the ecosystems are present in the biosphere. Ecology is "the branch of biology that deals with the relations of organisms to one another and their physical surroundings." Ecologists are required to maintain large amounts of statistical records, such as sampling the number of species in a given area. Statistical ecology deals with the creation of new methodologies for analyzing ecological data.

Models of the geographic distributions of species have wide applications in ecology. But the nonspatial, single-level, regression models that ecologists have used frequently do not deal with obstacles of irregular sampling intensity or spatial dependence and do not sufficiently quantify uncertainty. Adding hierarchical levels to the models has many benefits in allowing the human transformation of the landscape to be taken into account, as well as additional parameters of the sampling process. Many software utilized are namely Vortex, Rama, GIS, and so on.



Utilization of such advanced helps ecologists in research but also know the condition of an ecosystem and the problems that may arise. It in itself is not a solution but it certainly leads us closer to it.