



# Revealing Nature's Secrets

Mathematical ecology is a growing and active area of interdisciplinary research between mathematics and ecology, using almost every part of mathematics (linear algebra, analysis, differential equations, stochastic processes, numerical simulations, statistics) to understand and model complex biosystems. This modeling helps establish important parameters and thresholds, such as the area required to sustain a species or how fast an invasive species will spread through a region.

Models must be fairly complex to capture how a single species interacts with other species and with its environment. Today's mathematical ecology researchers are faced with the far more daunting task of simulating several interconnected networks of organisms across different scales of time, size, and space. To do that, researchers resort to some relatively new areas of mathematics, for example non-linear dynamical systems and spatial statistics.

**For More Information:** *Mathematical Models in Biology*, Leah Edelstein-Keshet.



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The **Mathematical Moments** program promotes appreciation and understanding of the role mathematics plays in science, nature, technology, and human culture.

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