

# A Multi-Model Approach to Understanding Growth, Reproduction, and Life History Strategies in Bromeliads

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The plant family Bromeliaceae contains over 3000 species of rosette-structured flowering plants (commonly known as bromeliads), and includes the pineapple and Spanish moss. The long lifespan of many Bromeliaceae species (up to 100 years in some species) can make it difficult to *in situ* study the growth and reproduction of individual rosettes over their lifetime. However, this provides fertile ground for developing mathematical and computational models that can simulate and predict growth, reproduction, and population dynamics across many decades. These models have the additional benefit of allowing for simulations which consider the impact of changing environmental conditions, like climate change or the introduction of invasive species. In this talk, we will tour the variety of mathematical models being used to simulate bromeliad growth & reproduction, from simple single equation continuous functions and discrete difference equations to more intricate models of systems of differential equations and agents-based models. Each model provides a different lens from which to view and understand bromeliad growth, reproduction, and life history strategies.