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Population dynamics of discrete breeders

Many species are discrete (annual) breeders who, between reproductive events, consume resources and may die. Their resource often reproduces continuously or has short, overlapping generations. An accurate model for such life cycles needs to represent both, the discrete and the continuous processes in the community.

I will present a basic model for a single consumer and its resource in a two-season environment. I will give some basic properties of the model and explain how it differs from the purely continuous and the purely discrete analogues that have been studied for many decades. Then I will expand the model in two aspects: (i) I will consider coexistence mechanisms for many discrete-breeder consumers on a single limiting resource, and (ii) I will introduce spatial movement and present conditions for Turing pattern formation in such systems. This is joint work with Yunfeng Geng and Xiaoying Wang.