The effect of water level in prey-predator interactions: A nonlinear analysis study

This paper is dedicated to the memory of Ovide Arino

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Abstract

Water level may influence local community dynamics. We examine how seasonal variations in water level affect the outcome of prey-predator interactions in Parloup Lake in the south of France. We propose a new model to describe the annual cycle of persistence by using continuation theorem of coincidence degree.

Highlights

► A new model describing the interaction between predator and prey in Parloup Lake. ► Existence of periodic solution is proved. ► Seasonal variation in water level is an important factor for persitence.