

## DYNAMICAL BEHAVIOR OF PREDATOR-PREY MODEL SUBJECTED TO ALLEE EFFECT IN THE PREDATOR

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Implementation of prey-predator interaction in mathematical form has a long history after discovering the pioneer work by Lotka and Volterra. This model provides a more realistic description about predation, reproduction, mortality term etc. It is recognized that population can be subjected to Allee effect when the population density is small [4, 3]. Introduction of Allee effect can change the dynamics of the model, particularly affect the persistence of the species. Previous studies mostly focused on the dynamics where Allee effect occurs in prey growth [2]. In this talk I will consider the prey-predator model where Allee effect occurs in the numerical response of predator without affecting the functional response. Biologically there are many reasons such as lack of mating partners, pollen deficiency, sperm limitation, cooperative breeding mechanisms etc. to arise this situation [1, 4, 5]. At first we consider a generic mathematical formulation of Allee effect and then consider the local and global bifurcation structure of the model with three different types of parameterisations of the Allee effect. Finally we show that regardless of parameterisations, Allee effect in predator results in system destabilization and extinction of the predator population.

### References

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