

# AN ECO-EPIDEMIOLOGICAL MODEL WITH FEAR INDUCED IN PREY POPULATION

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In this paper we consider an eco-epidemiological model with disease in prey population. Disease in prey divides the total prey population into two subclasses, susceptible prey and infected prey. The disease is transmitted from infected prey to susceptible prey through contacts. The model incorporates fear of predator that reduces the growth rate of the prey population. Furthermore, fear of predator lowers the activity of a fraction of the prey population, which reduces the disease transmission. The model is well-posed with bounded solutions. It has an extinction equilibrium, susceptible prey equilibrium, susceptible prey-predator equilibrium, and coexistence equilibria. The model exhibits fear-induced backward bifurcation and bistability. Extensive numerical simulations show the presence of oscillations and occurrence of chaos due to fear induced lower disease transmission of a fraction of the prey population.

## References

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