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*Dynamics of a three-species food chain model with fear effect*

In this paper a three-species food chain model is formulated to investigate the impact of fear. First, we derive the predator's functional response by using the classical Holling's time budget argument and formulate a three-species food chain model where the cost and benefit of anti-predator behaviours are included. Then we study the dissipativity of the system and perform analysis on the existence and stability of equilibria. At last, we use numerical simulations to more visually explore the effects of fear on three species. The results show that the predator's fear effect can transform the system from chaotic dynamics to a stable state. Our results may provide some useful biological insights into ecosystems containing predator-prey interactions.