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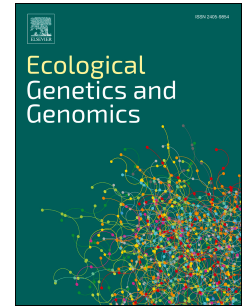
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Stability analysis of a prey-predator fractional order model incorporating prey refuge

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Abstract

In this paper, a fractional-order prey-predator model with Holling type II response function incorporating prey refuge has been proposed. We first prove the existence, uniqueness, non-negativity and boundedness of the solution for the considered model. Moreover, we have also studied the existence of various equilibrium points and some sufficient conditions are derived to ensure the global asymptotic stability of predator-extinction equilibrium point and co-existing equilibrium point. Some numerical simulations are performed in this article using MATLAB FDE12 function.

Keywords and phrases : Global asymptotic stability; Fractional Differential; Predator-prey model; Prey refuge; Numerical simulations.

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