

Accepted Manuscript

Dynamical behavior of a one predator and two independent preys system with stochastic perturbations

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PII: S0378-4371(18)31344-X
DOI: <https://doi.org/10.1016/j.physa.2018.10.006>
Reference: PHYSA 20264

To appear in: *Physica A*

Received date: 1 August 2018
Revised date: 28 September 2018

Please cite this article as: C. Ji, et al., Dynamical behavior of a one predator and two independent preys system with stochastic perturbations, *Physica A* (2018), <https://doi.org/10.1016/j.physa.2018.10.006>

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Highlights:

- (1) This paper consider a one predator and two independent preys system with stochastic perturbations.
- (2) This model ignores the effect of the intraspecific competition for the predator and thus it is more difficult to investigate its dynamics.
- (3) We establish sufficient criteria for extinction and persistence in time average, which are nearly necessary.
- (4) We also show that this system has a stationary distribution and it is ergodicity.
- (5) We give some simulations to verify our results.

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