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On a predator-prey system of Holling type. (English) Zbl 0868.34023

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Summary: We consider a predator-prey system with a fairly general functional response of Holling type and give a necessary and sufficient condition under which this system has exactly one stable limit cycle. Our result extends previous ones and is an answer to a conjecture which was recently presented by *J. Sugie, K. Miyamoto* and *K. Morino* [Appl. Math. Lett. 9, No. 4, 85-90 (1996; [Zbl 0865.34032](#))].

MSC:

34C05 Topological structure of integral curves, singular points, limit cycles of ordinary differential equations Cited in **56** Documents

70K05 Phase plane analysis, limit cycles for nonlinear problems in mechanics

92D25 Population dynamics (general)

37G15 Bifurcations of limit cycles and periodic orbits in dynamical systems

Keywords:

limit cycles; global asymptotic stability; predator-prey system; functional response; general functional response of Holling type; one stable limit cycle

Full Text: [DOI](#)

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