

A Causal-Behavioral Map of the Predator-prey Oscillatory System using Pathway Participation Metrics.

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At the heart of effective decision making in dynamic complex systems is the telling consistent and eloquent system stories linking cause-and-effect relations to time and space. Historically, while lack of a formal technique for story telling has been recognized, such stories have been told by experience modelers using guess work and tedious and sometime highly mathematical sensitivity analysis. This paper reports an old-correct hypothesis, but not fully tested, about the connection between the behavior of the predator-prey oscillatory system and its structure. The application of pathway participation technique in the predator-prey model demonstrates that shifts in the dominance of the minor loops from one to another cause a sustain oscillation in the system.