

FIRST WORKSHOP

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BIOLOGY AND NATURAL SCIENCES "

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ABSTRACT | Frank Hilker

Title

Controlling chaotic population dynamics

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Abstract

Interactions in ecological communities are inherently nonlinear and can generate complex population dynamics including chaos. In chaotic regimes, extremely small population abundances and recurrent outbreaks occur in an apparently erratic manner. Any management strategy appears therefore doomed to failure. The seeming disorder of chaos, however, is based on simple laws. Making use of the short-term predictability, we derive simple management methods that can prevent crashes, peaks or any other undesirable state. The aim of this talk is to illustrate some applications of chaos (anti-)control ideas in ecological settings. Approaches developed mainly in the precisely controllable world of physics need to be extended to the uncertainty and variability of ecosystems. This is joint work with Frank H. Westerhoff (University of Bamberg, Germany).