

WORKSHOP
Statistical Methods for Modeling Dynamic Systems
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Understanding Simple Population Dynamics

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Abstract

Even simplest dynamic models for populations and ecosystems can exhibit a wide range of complex dynamics, but these are found rarely if at all in natural ecological systems. I will discuss research, mostly by me and my students, on two issues raised by this discrepancy. (1) Why is dynamic complexity rare in natural ecosystems? (2) How can we identify the mechanistic causes for observed simple dynamic patterns (stability or regular cycles), when experimental tests are infeasible? Case studies include experimental predator-prey dynamics in aquatic microcosms, population cycles of forest insects, and plant populations with age, size, and site-dependent demographic rates.