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Analysis of pine lopper population dynamics with discrete mathematical models

The well-known discrete time mathematical models (Moran Ricker model, modified discrete logistic model, Kostitzin model, Skellam model, and Varley Gradwell Morris model) were used for analysis of pine lopper (Bupalus piniarius L.) population dynamics in national park De Hoge Veluwe (Klomp, 1966 The Global Population Dynamics Database, N 2727, N 2728 and N 2729). Analysis of three correlated time series (for larva, pupae, and eggs) showed, that good approximation (global fitting) can be obtained with discrete logistic model trajectories. It means that in considering location population cannot realize its eruptive properties (Isaev et al., 1984, 2001), population dynamics can be explained as a result of influence of intra-population self-regulative mechanisms, and its dynamics can be characterized by the narrow phase portrait with unique stationary state.