Inverse problems of the Holling-Tanner Model with complete and incomplete information

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Keywords: Holling-tanner Model, Parameter Estimation, Incomplete information, Inverse problem

The inverse problem of parameter identification of nonlinear system of ordinary differential equations are considered in the case complete and incomplete information about functions of Holling-tanner Model. In the case of incomplete information it is possible to eliminate unknown function from the system of equations. Obtained equation for the known function is linear with respect to a new set of unknown parameters. These parameters functionally depend on six original unknown parameters. It's shown that only five of the original unknown parameters can be identified in the case when only one of the functions is known. Moreover, it's shown that additional knowledge of the second function at one point makes it possible to find all six unknown parameters and completely restore the unknown function. The methods developed in the present report are used for prediction and extrapolation of the system behaviour.

References

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