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Roby Poteau* (rpoteau2010@my.fit.edu) and **Ugur Abdulla**. *On the inverse problems for the nonlinear dynamical systems arising in mathematical biology*. Preliminary report.

We consider the inverse problem for the identification of constant parameters for systems of nonlinear ODEs arising in mathematical biology. We implement a numerical method suggested in U.G.Abdulla, Journal of Optimization Theory and Applications, 85, 3(1995), 509-526. The method combines Bellman's quasilinearization with sensitivity analysis and Tikhonov's regularization. We apply the method to various biological models such as the classical Lotka-Volterra system, bistable switch model in genetic regulatory networks, gene regulation and repressilator models from synthetic biology. The numerical results and application to real data demonstrate the quadratic convergence. We discuss the application of the method for the identification of functional parameters in the Hilbert spaces setting. (Received September 21, 2016)