1011-92-319   **Glenn Ledder*** (`gledder@math.unl.edu`), Department of Mathematics, 203 Avery Hall, University of Nebraska-Lincoln, Lincoln, NE 68588-0130. *Asymptotic Analysis of the Spruce Budworm Model.*

In a classic 1978 paper (Qualitative analysis of insect outbreak systems: the spruce budworm and forest, *J. Anim. Ecol.*, 47, 315-332), Ludwig, Jones, and Holling derived and analyzed a simple differential equation model for the complicated dynamics of cyclic deforestation of spruce forests by the spruce budworm. Since its original publication, the Ludwig-Jones-Holling model has appeared in a number of mathematical biology texts. Unfortunately, most of the presentations of the model perpetuate an inaccuracy in the asymptotic ordering assumptions used in the Ludwig-Jones-Holling analysis. In this talk, we present a revised asymptotic analysis of the Ludwig-Jones-Holling model based on that of A. C. Fowler (*Mathematical Models in the Applied Sciences*, Cambridge, 1997). Of particular interest is the question, not treated by Fowler, of what ranges of parameter values yield the three possible model outcomes: minimal infestation, permanent deforestation, and cyclic deforestation. The analysis of this question suggests efforts that could be made at biological prevention of budworm outbreaks. (Received August 30, 2005)