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**Benito Chen-Charpentier, Maria Leite\*** (mcleite@mail.usf.edu), **Orou Gao** and **Folashade Augusto**. *Plants Persistence under Multiple Stressors: Mathematical Modeling Approach*. Preliminary report.

Population viability analysis measures the likelihood of a population going extinct. It is often used to determine the impact of different endangered species management and their potential impacts of habitat loss. Plants, especially endangered species are usually affected by multiple stressors, including insects, and herbivores, environmental factors such as drought and heat, and other species. Here we present models based on systems of ordinary differential equations of two herbivores feeding (stressors) on the same plant species. The models incorporate several features: no competition between the herbivores, only intra-species competition, and intra as well as inter-species competition. In addition, the models integrate distinct types of multiple stressors: synergistic or antagonistic.

We investigate conditions for coexistence of the tree. Our results suggest that to obtain stable coexistence solutions the model needs to incorporate significant herbivore species interaction: inter- or intra-species competition or both. (Received September 26, 2017)