1155-34-180 **Gampola Waduge Nalin Fonseka*** (g_fonsek@uncg.edu), **Ratnasingham Shivaji**, **Jerome Goddard**, **James Cronin** and **Jackson Leonard**. *Modeling the effects of density dependent emigration, weak Allee effects, and matrix hostility on patch-level population persistence.*

The relationship between conspecific density and the probability of emigrating from a patch can play an essential role in determining the population-dynamic consequences of an Allee effect. In this paper, we model a population that inside a patch is diffusing and growing according to a weak Allee effect per-capita growth rate, but the emigration probability is dependent on conspecific density. The habitat patch is one-dimensional and is surrounded by a tuneable hostile matrix. We consider five different forms of density dependent emigration (DDE) that have been noted in previous empirical studies. Our models predict that at the patch-level, DDE forms that have a positive slope will counteract Allee effects, whereas, DDE forms with a negative slope will enhance them. Also, DDE can have profound effects on the dynamics of a population, including producing very complicated population dynamics with multiple steady states whose density profile can be either symmetric or asymmetric about the center of the patch. Our results are obtained mathematically through the method of sub-super solutions, time map analysis, and numerical computations using Wolfram Mathematica. (Received January 12, 2020)