1171-34-5 **Gampola Waduge Nalin Fonseka*** (fonsekan@carolinau.edu), 1825 Sherwood St, Apt C, Greensboro, NC 27403, **Jonathan Machado** (r_shivaj@uncg.edu), Greensboro, NC 27402, and **Ratnasingham Shivaji**. *A study of logistic growth models influenced by the exterior matrix hostility and grazing in an interior patch.*

We will analyze the symmetric positive solutions to the two-point steady state reaction-diffusion equation:

$$\begin{aligned} -u'' &= \begin{cases} \lambda\left[u - \dfrac{1}{K}u^2 - \dfrac{cu^2}{1+u^2}\right]; \ x \in [L, 1-L] \\ \lambda\left[u - \dfrac{1}{K}u^2\right]; \ x \in (0, L) \cup (1-L, 1) \end{cases} \\ -u'(0) + \sqrt{\lambda}\gamma u(0) &= 0 \\ u'(1) + \sqrt{\lambda}\gamma u(1) &= 0 \end{aligned}$$

where λ, c, K, and γ are positive parameters and the parameter $L \in (0, \frac{1}{2})$. The above model exhibits logistic growth in the one-dimensional habitat $\Omega_0 = (0, 1)$, where grazing (type of predation) is occurring on the subregion $[L, 1-L]$. In this model, u is the population density and c is the maximum grazing rate. λ is a parameter which influences the equation as well as the boundary conditions, and γ represents the hostility factor of the surrounding matrix. Here we discuss the occurrence of S-shaped bifurcation curves for certain parameter ranges, when γ is finite. (Received June 08, 2021)