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**SIDDHARTH SABHARWAL**, Texas A&M University  
*Population Size in Stochastic Ecological Dynamics*

We study how environmental stochasticity influences the long-term population size in certain one- and two-species models. The difficulty is that even when one can prove that there is coexistence, it is usually impossible to say anything about the invariant probability measure which describes the coexisting species. We are able to circumvent this problem for some important ecological models by noticing that the per-capita growth rates at stationarity are zero, something which can sometimes yield information about the invariant probability measure. For more complicated models we use a recent result by Cuello to explore how small noise influences the population size. We are able to showcase that sometimes environmental fluctuations lead to an increase in the population sizes, contrary to the Cushing-Henson conjecture. Further we look at the interaction of dispersal and environmental stochasticity in an  $n$ -patch model. We are able to prove persistence and extinction results even in the setting when the dispersal rates are stochastic.