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Alexandru Hening*, alexandru.hening@tufts.edu, and **Dang H Nguyen, Sergiu C Ungureanu** and **Tak Kwong Wong**. *Asymptotic harvesting of populations in random environments*.

We consider the harvesting of a population in a stochastic environment whose dynamics in the absence of harvesting is described by a one dimensional diffusion. Using ergodic optimal control, we find the optimal harvesting strategy which maximizes the asymptotic yield of harvested individuals. To our knowledge, ergodic optimal control has not been used before to study harvesting strategies. However, it is a natural framework because the optimal harvesting strategy will never be such that the population is harvested to extinction—instead the harvested population converges to a unique invariant probability measure. When the yield function is the identity, we show that the optimal strategy has a bang–bang property: there exists a threshold such that whenever the population is under the threshold the harvesting rate must be zero, whereas when the population is above the threshold the harvesting rate must be at the upper limit. (Received September 10, 2019)