

Analysis of two "Rolling carpet" strategies to eradicate an invasive species

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In order to prevent the propagation of human diseases transmitted by mosquitoes (such as dengue or zika), one possible solution is to *act* directly on the mosquito population. In this talk, we consider an invasive species (the mosquitoes) and we study two strategies to eradicate the population. The dynamics of the population is modeled through a bistable reaction diffusion equation in an one-dimensional setting and both strategies are based on the same idea : we *act* on a moving interval. The *action* of the first strategy is to kill as many individuals as we can in this moving interval. The *action* of the second strategy is to release sterile males in this moving interval. For both strategies, we manage to generate traveling waves that propagate in the opposite direction than the natural invasive traveling wave, thus we succeed in eradicating the invasive species. Furthermore, for the first strategy, we fully characterize the minimal size of the interval where it is necessary to kill the individuals in order to insure the extinction of the population. All the results are illustrated by numerical simulations. This talk is based on a forthcoming paper.