A Comparison of the Trojan Y Chromosome Strategy to Harvesting Models for Eradication of Non-Native Species

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The Trojan Y Chromosome Strategy (TYC) is a promising eradication method for biological control of non-native species. The strategy works by manipulating the sex ratio of a population through the introduction of *supermales* that guarantee male offspring. In the current manuscript, we compare the TYC method with a pure harvesting strategy. We also analyze a hybrid harvesting model that mirrors the TYC strategy. The dynamic analysis leads to results on stability, global boundedness of solutions and bifurcations of the model. Several conclusions about the different strategies are established via optimal control methods. In particular, the results affirm that either a pure harvesting or hybrid strategy may work better than the TYC method at controlling an invasive species population.

References

[1] Jingjing Lyu, Pamela Schofield, Matthew Beauregard, and Rana Parshad. *A Comparison of the Trojan Y Chromosome Strategy to Harvesting Models for Eradication of Non-Native Species*. Submitted to Natural Resource Modeling , Oct 2018. An arXiv preprint is availabe at http://arxiv.org/abs/1810.08279.

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