Disease-driven dynamics of evolutionary rescue from a game theoretic perspective

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OBJECTIVE
Integrate epidemiology with game theory to find conditions and time scales for evolutionary rescue

ASSUMPTIONS
• Continuous, direct disease transmission
• Recovery confers immunity
• Uniform susceptibility across life history
• No vertical transmission

RESULTS
In the presence of a highly virulent disease, there exists the possibility for a population with biologically plausible parameters to undergo evolutionary rescue.

CONCLUSIONS
1. Evolutionary rescue can occur given our relative payoffs and selected parameters
2. How well a disease persists impacts whether evolutionary rescue can occur and its time scale

FUTURE WORK
• Bifurcation analysis to predict regime shifts
• Add disease vectors, life history, and dynamic carrying capacity to test effects of coevolution and climate change
• Add intermittent outbreaks, predator-prey dynamics, genotypic strategies, and gene flow

SELECTED REFERENCES

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