

IS-3 Mathematical Modeling of the Transmission of Chytrid Fungus in Coqui Population

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Many Amphibian species have seen a drastic decline over the last decade. One of the major causes is endemic disease called *Batrachochytrium dendrobatidis* (Bd), caused by the chytrid fungus. In some region this fungus has been introduced to combat certain invasive species but due to lack of understanding of mechanism of the transmission of Bd it has shown varied success. *Eleutherodactylus Coqui* a native amphibian in Puerto Rico and invasive species in Hawaii, that government wants to eradicate since the *E. coqui* affects native species and have negative impact on their tourism. In this research we develop and analyze a hybrid model that includes transmission of chytrid fungus and role of predators on the Coqui population. It is assumed that Coqui population can be infected via contact from other infected individuals or from the infected environment (water, soil, etc). We perform parameter sensitivity analysis on the model outputs to study the effect of multiple transmission pathways and predation. Numerical simulations suggest that direct individual ?individual transmission has significantly more impact on the dynamics of Coqui population as compared to predation and environmental influence.