The Efficacy of Abiotic/Biotic Factors and Trap Design for Effective Capture of Invasive American Bullfrog Tadpoles (Lithobates catesbeianus)

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An invasive species is defined as a “non-native to the ecosystem whose introduction causes environmental impact (USDA, 1999).” In the early 1900’s, the American Bullfrog was introduced to many areas in the Western United States, exhibiting many biological characteristics that contribute to its invasiveness, such as broad temperature tolerance, the ability to adapt quickly, and a diet consisting of anything they can swallow. In this study, bullfrog tadpoles were netted from ponds within Blanca Wetlands, CO (a federally managed property with several bullfrog-infested wetlands) with the goal of investigating effective and efficient capture in a real-world setting. Both abiotic and biotic attractants were tested using a 340 L choice chamber to initially determine which baits might be effective. It was found that fish meal, algae wafers, trout, and a diving flashlight were significantly attractive in a lab setting. Field trials were conducted in a bullfrog tadpole infested geothermal pool. Findings demonstrate that the flashlight combined with the steel trap had a significant capture rate as well as the combination of Promar with trout bait. In addition, field testing revealed the capture of three different size classes of tadpoles based on histogram analysis. Tadpole length data revealed that Promar traps caught smaller tadpoles while steel traps caught larger tadpoles. This research is critical for understanding tadpole seasonal behavior, implicating that the large-scale deployment of different trap/bait combinations can be used to reduce the spread of the invasive bullfrog by removing them in high quantities before they metamorphose into adults.

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Second Award of $2,000