Recent rapid range expansion and impacts of the introduced American bullfrog (Rana catesbeiana) in British Columbia: Is eradication or even control feasible?

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Bullfrogs were introduced to British Columbia in the 1930's as part of a scheme to start a frog-leg farming industry in the province. None of these farms proved to be economically viable. The breeding stock released from these farms persisted in natural wetlands and have been noted only sporadically in the natural history literature. However, starting in the mid 1990's wildlife biologists and naturalists noticed a rapid growth of these bullfrog populations on Vancouver Island and the lower mainland. Since 1997 we have documented the natural and human aided spread of these bullfrog populations in British Columbia. Using both experimental and field studies we quantified the impact these introduced bullfrogs have on native frogs in southern Vancouver Island. As tadpoles, bullfrogs have only a minor impact on the Pacific treefrog tadpoles and a moderate impact on redlegged frog tadpoles. However, predation by bullfrog adults on both native species may have a much more profound effect their population sizes. Using capture-mark-recapture analysis we estimated growth and survival rates of bullfrogs. We used these parameter estimates in matrix population models to identify the life-history stage that most contributes to population growth rates. Theory predicts that to be most effective, control efforts should focus on this life-history stage. We discuss the advantages and disadvantages of control efforts on different life-history stages. Also, we compare characteristics of populations that have had control imposed on them to those of uncontrolled populations to assess the impact of the control efforts. We discuss the benefits, problems and the feasibility of control programs for introduced vertebrate species using volunteer stewardship groups.