

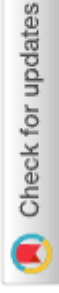
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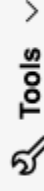
Using acoustic energy of vocalizations to monitor population size and phenology of anurans FREE

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As a species that lives at the land/water interface, the American bullfrog (*Rana catesbeianus*) serve as a bioindicator in many habitats, yet also invasive in many locations. Due to challenges with traditional monitoring approaches, there is a lack of fine-scale population and phenological data for bullfrogs. Passive acoustic monitoring (PAM) can provide a low-cost alternative with high-resolution data for monitoring vocal animals. Sexually mature male bullfrogs attract mates by calling from exclusive territories. These vocalizations can be used to explore bullfrog behavior, population size, and phenology. We describe the analysis framework and initial results from an project monitoring the vocal behavior of frogs in 25 ponds in southeastern New Hampshire during the reproductive season using acoustic arrays. By using an acoustic energy index (RMS amplitude), we can estimate numbers of frogs in ponds, determine timing of reproduction, and even document anthropogenic disturbance. Our results can lead to future uses of PAM to monitor population size and phenology and develop reliable long-term management and conservation strategies.