

Rapid upscaling in passive acoustic monitoring of bats using citizen science: knowledge gaps and future perspectives.

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Addressing the biodiversity crisis requires representative monitoring data to inform national conservation policy decisions. Considered valuable indicators of ecosystem health, bats are monitored under citizen science programmes in the UK, contributing to national biodiversity statistics. Passive acoustic methods are commonly used to monitor bats due to their use of echolocation and ability to identify genera or species from the call characteristics. Recent advances in sensor hardware and automated echolocation call classification tools have enabled the development of new citizen science passive acoustic monitoring projects in the UK. Leveraging the UK network of citizen scientists, passive acoustic data on bat activity can now be collected at greater spatial, temporal, and taxonomic scales than previously possible. Data collected under these citizen science surveys will improve national bat population trend estimates and the understanding of bat responses to anthropogenic environmental change. In addition, volunteer engagement and participation accessibility increased as expert knowledge on in-field species identification is not required. However, knowledge gaps remain around sampling design, and bat abundance estimation using passive acoustic methods. Addressing these gaps will improve the power of passive acoustics monitoring methods for biodiversity data collection.