



Ecoacoustic insights into bird responses to fire

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ABSTRACT

While bushfire forms an integral part of the Australian landscape, the duration, size and timing of recent fires, including the 2019-2020 'megafires', is unprecedented. In this context, understanding the resilience of birds to fire is urgent and requires a landscape-scale approach. In 2021, we initiated the collection of ecoacoustic data in conjunction with standard survey protocols for birds (point-count transects) at more than 1400 sites within eight Ecological Fire Groups (EFGs) in Victoria. Within EFGs, sampling sites were stratified across post-fire growth stages and last fire intervals. Previous work indicated that 'listening surveys' of a small sample of the collected audio data identified more species in more sites when compared similar duration point-counts, but some species were only detected by one method or another. In 2025, we implemented the use of BirdNET (v2.4) to identify birds within all recordings at a site, detecting 71% more species in less time than our listening survey approach, improving reporting rates to enable modelling of 47% more species, and with fewer species detected by only one method. The combination of ecoacoustic data collection with multi-species classifier analysis allows a scalable and efficient approach to occupancy modelling of bird responses to fire within Victoria.