Automating camera-trap data reporting for wildlife monitoring

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Keywords: Camera traps, R package, automated reporting, EOW, wildlife conservation

Camera traps are vital for wildlife monitoring and biodiversity research, enabling continuous data collection across diverse ecosystems. However, processing, standardising and analysing these datasets can be challenging, as existing methods for data validation, interpretation and visualisation are often too complex for many end users. Simplifying these processes is crucial for enhancing biodiversity conservation efforts. To address these challenges, we developed an R package that automates the generation of informative reports from camera trap data, streamlining analysis and visualisation. The package provides a comprehensive suite of ecological analyses, including assessments of sampling efforts, species richness, species co-occurrence, spatial density, abundance distribution, community composition, habitat preference, activity patterns, population density, and spatial distribution mapping, all with interactive visualisations. Input data follows the Camtrap DP format from Agouti and TRAPPER. A quality assessment categorizes datasets as high, medium, or low, with only high- and medium-quality records analysed. The reporting system generates standardised outputs, presenting key ecological metrics in tabular and graphical formats across spatial and temporal scales. We demonstrate the package with data from the European Observatory of Wildlife (EOW), a large-scale collaborative network of wildlife monitoring across 73 study sites in Europe. By standardising data collection and analysis, the package enhances comparability, scalability, and reproducibility across protected areas. The package automates analyses and report generation, transforming raw camera trap data into structured ecological insights while facilitating efficient biodiversity trend detection and wildlife status assessment. This approach saves time, supports users of all programming skill levels and supports informed decision-making for conservation efforts.