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Technological Advances in Wildlife Monitoring and Conservation



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Wildlife as one of the major categories of research and ecosystem management within the ecosystems, have a key role in maintaining structure, function and balance of ecosystems. However, the wildlife, its interaction and associated processes with environment and ecosystem equilibrium have received inadequate focus due to the constraints of conventional tracking and detection techniques. But in recent years, the technology of wildlife monitoring has shown enhanced improvement and change with the advancement of automatical and information technologies into the science.

The significant emergence of AI in wildlife monitoring has particular importance as it helps to gather vast amount of data which can be used for computer vision and interpretation. Acoustic tracking be described as the identification and documentation of sounds produced by wildlife and their subsequent analysis for numerous purposes including the determination of species presence, distribution and behavior. The AI algorithms (Support Vector Machines (SVM), Random Forest (RF) classifiers) are capable of being trained over big data samples of audio recordings to accurately identify and categorize wildlife sounds including calls, songs and vocalizations [1].

Technologically, from early radio telemetry used in research to modern satellite tracking, more animals could be tracked in increasingly fathomable manners. Remote sensing with satellites is useful in developing complex ecological niches and predicting possible dangers to the animals. For example, satellite photographs have greatly assisted the identification and monitoring of illicit logging practices in rainforests and this has helped in interventions and formulation of wildlife protection and tracking strategies.

Also, recent tracking devices like GPS collars and satellite tags have enabled researchers to new outlooks in animal behavior and movement. Automated sensors, for example digital cameras and recording devices like microphones, can give high frequency of species recordation without influence on the species' behavior. Molecular tools like DNA barcoding and genomic sequencing are helping in understanding the genetic well-being of the wildlife species and assessing the effect of inbreeding and genetic drift going on in the species.

The advent of different thermal, optical and environmental sensors has helped in collecting information on wildlife habitat, and activities. The thermal infrared or TIR is very useful in tracking wildlife species since plants and animals emit light in TIR at their normal body temperature; this is the reason why, in contrast to the visual band they are detectable at night or in conditions of limited visibility.

In conclusion it was clearly evident that technological advances in monitoring wildlife and its conservation can make a great contribution to the traditional tracking methods. The future of wildlife preservation depends on capacity to strike a balance between creativity and sustainability by using technology not just to protect our natural habitats but also to reuse this in future.

REFERENCE

- [1] Sharma S, Sato K, Gautam BP. A Methodological Literature Review of Acoustic Wildlife Monitoring Using Artificial Intelligence Tools and Techniques. *Sustainability*. 2023 Apr; 15(9): 2-20. doi: [10.3390/su15097128](https://doi.org/10.3390/su15097128).

