

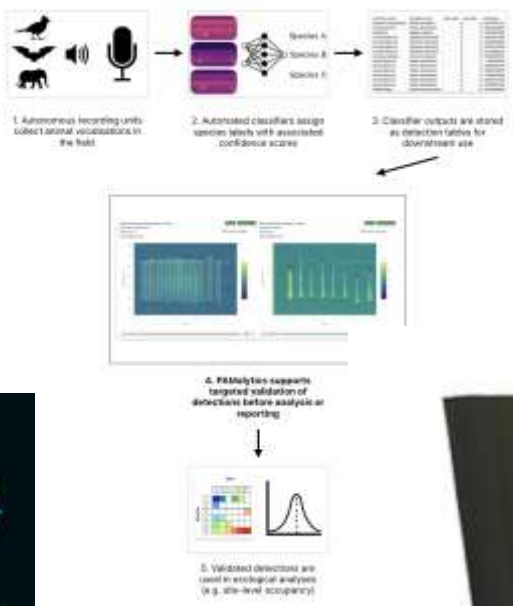
Ethical and Equitable AI for Biodiversity Monitoring

Jenna Lawson

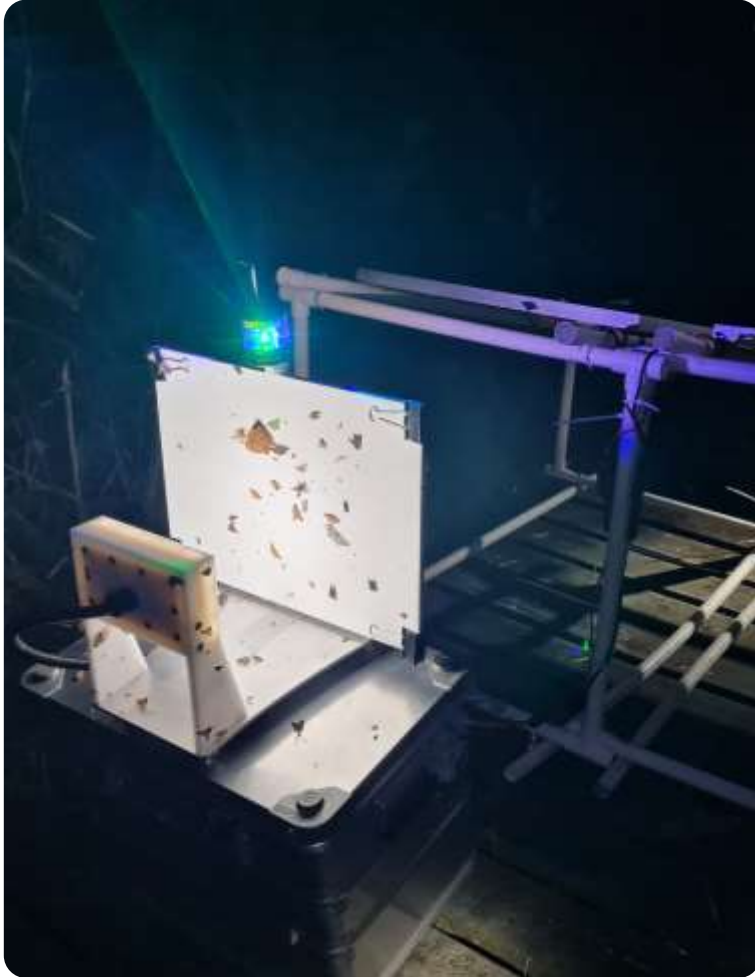
03/09/2026



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Cameras and Computer Vision



Raw images



Bioacoustics

Ultrasound

Audible

Soil

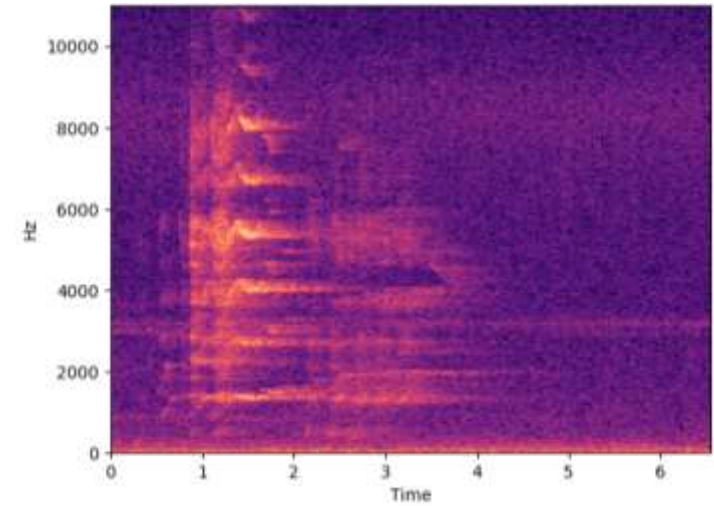
Terrestrial

Freshwater

Marine



Species Classifiers



Innovate 4 Nature

UK Government funded programme- Focused on opportunities, needs, barriers and solutions to enhance the effective adoption and use of technology and data.

Accessibility to technology and capacity to use technology is inequitable and doesn't exist where it is needed the most.



AI-Data Challenges and Needs

Artificial intelligence offers major efficiency gains in reducing data processing times, increasing spatial and temporal coverage, and extracting insights from large datasets, but only where local reference data, infrastructure, and capacity exist.

Bias in machine learning/AI classifiers: Lack of labelled training data for classifiers and unknown/undiscovered species reduces performance and prevents use.

Standardisation and quality: Lack of standardisation, frameworks and trust in data limit data use in decision making e.g. difficult to compare performance across different AI models and implementation contexts.

Data Infrastructure: Limited computing power, unreliable electricity and connectivity, and insufficient data storage constrain local analysis and exasperate existing inequalities.

Capacity gaps: Capacity gaps are significant in data management, processing, analysis and interpretation. Capacity is often external for data analysis, especially related to AI based analysis.

Complexity limits use: Many models remain inaccessible to non-technical users due to command-line interfaces and programming requirements.

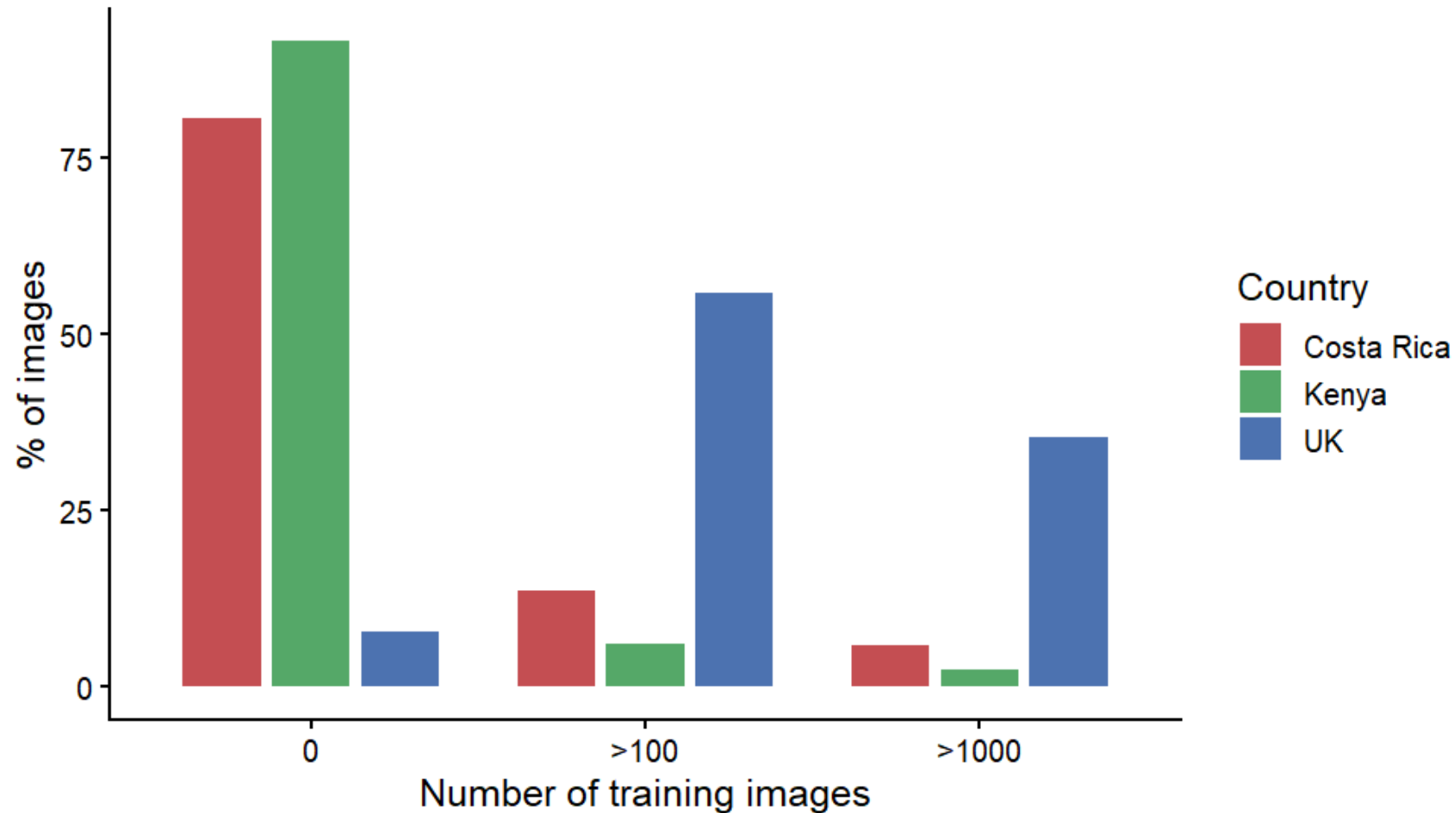
Governance: There is a lack of data governance frameworks and equitable data ownership arrangements that complement rather than marginalise TIK and local priorities.

Environmental impacts: including energy, water and land use associated with large-scale AI computation.

Working practices: Poor coordination, siloed working practices, and weak communication

“It is not innovation without implementation”

Labelled Data Challenge



AI/Data Recommendations



Easy and accessible analysis tools: Prioritise simple, robust, affordable, relevant tools that do not require skilled data scientists.



Develop locally relevant analytical tools and reference libraries: Support the development of labelled datasets, species classifiers and analytical tools required for emerging technologies such as AI to be used.



Build end-to-end capacity: Expand capacity development beyond data collection to include data management, analysis, interpretation, and decision-making and embed within institutions.



Strengthen standardisation and data quality: Establish standardised national or regional biodiversity data platforms and analysis approaches to improve interoperability and trust in data.



Improve data-to-decision pathways and policy integration: Strengthen communication between data producers, analysts and decision to ensure data is applied.



Strengthen data governance, ownership, and trust: Consider the communities where the data was collected. Establish clear, transparent data governance frameworks that define data ownership, custodianship, sharing, and ethical use.



Invest in enabling infrastructure and long-term funding: Move beyond short-term pilots by investing in person capacity, power, connectivity, computing capacity, data storage, and locally relevant analytical tools.

Thank you.

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