

# Nature through the eyes of many: Camera traps database – analytical model

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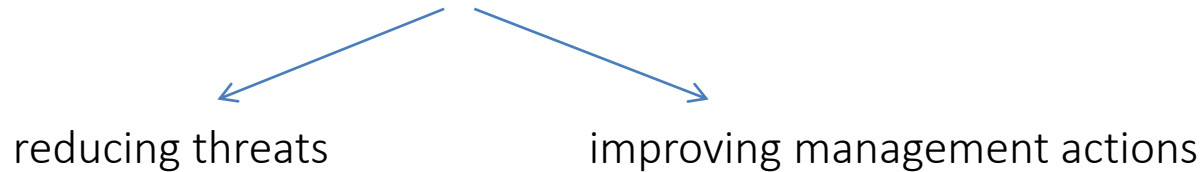
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## Environmental monitoring:

- Essential component of wildlife conservation and management
- Occurrence and abundance of a target species within a focus area



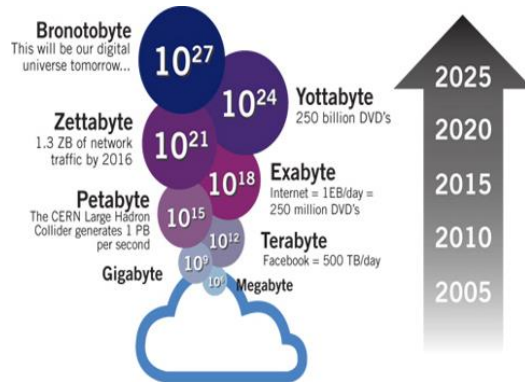
## Camera traps:

- One of the fundamental pillars of environmental monitoring and management
- Information about biology, ethology, population size and dynamics etc.



## Camera traps

- Continuous, long-term and non-invasive monitoring
- Expansion in use – by both professionals and general public
- Increasing demand for effective processing of multi-sourced and multi-format data, and the sharing data



**TABLE 1** Software characteristics and features of tested camera trap data management programs, as well as image variables that tested programs are able to record and process. —represents “no”, or the absence of a feature

	Renamer & CamTrap <sup>a</sup>	ViXen <sup>b</sup>	Aardwolf <sup>c</sup>	Camelot <sup>d</sup>	Snoopy <sup>e</sup>	Wild.ID <sup>f</sup>	Camera Base <sup>g</sup>	CPW Photo Warehouse <sup>h</sup>	eMammal <sup>i</sup>	camtrapR <sup>j</sup>	TRAPPER <sup>k</sup>	Agouti <sup>l</sup>
General features												
Operating system	Windows	Windows, MacOS	Windows, MacOS, Linux	Windows, Linux	Windows, MacOS	Windows	Windows	Windows	Windows, MacOS	Windows, MacOS, Linux	Windows, MacOS, Linux	Windows
Installation requirements	.exe	.exe	mySQL	mySQL	mySQL	Java	MS Access	MS Access	Internet access	R	Internet access, see website	Internet access

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REVIEW

**Software to facilitate and streamline camera trap data management: A review**

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**Abstract**  
Improving technology and increasing affordability mean that camera trapping—the use of remotely triggered cameras to photograph wildlife—is becoming an increasingly common tool in the monitoring and conservation of wild populations. Each camera trap study generates a vast amount of data, which need to be processed and labelled before analysis. Traditionally, processing camera trap data has been performed manually by entering data into a spreadsheet. This is time-consuming, prone to human error, and data management may be inconsistent between projects, hindering collaboration. Recently, several programs have become available to facilitate and to better standardize camera trap data management and assess their ability to identify available software for camera trap data management, and facilitate data sharing and used internet searches and contacted researchers and practitioners working on large camera trap projects, as well as software developers. We tested 12 available programs against a range of software characteristics in addition to their ability to record viewed 12 important data variables extracted from images. We identified and re-form simple software assisting with the extraction of metadata from an image, the programs tested were developed for use on specific studies and so do not cover a wide range of possible software or data collection requirements that different projects may have. We highlight the importance of a standardized software solution for camera enabling researchers to share data and contribute all possible data to be collected, using multi-project comparisons. By standardizing camera trap data collection and management in this way, future studies would be better placed to guide conservation policy on a global level.

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Remote Sensing in Ecology and Conservation  
REVIEW

**Best practices and software for the management and sharing of camera trap data for small and large scales studies**

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**Keywords**  
Best practices, data management, metadata, quality control, population trends, species identification

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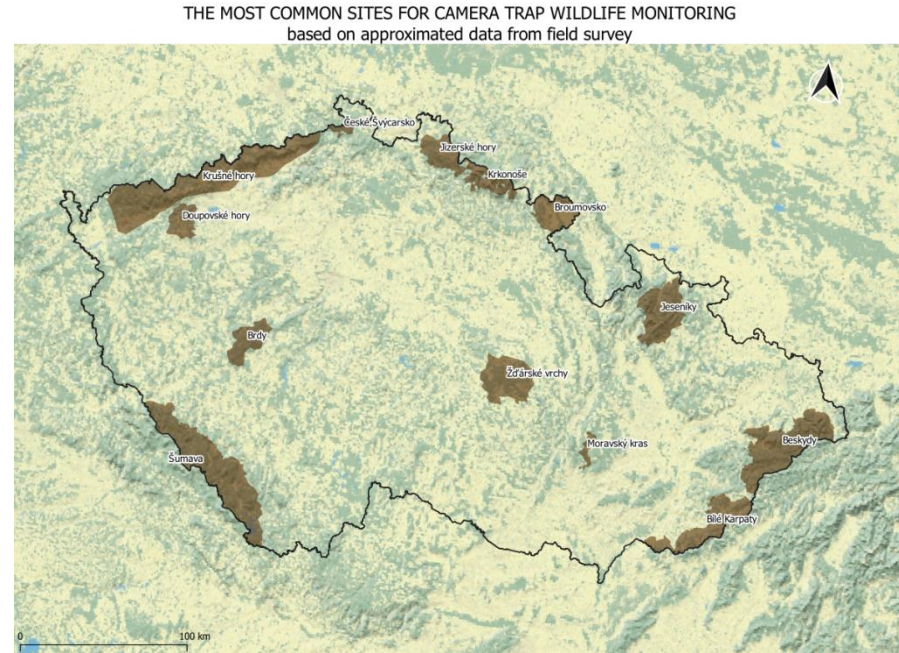
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## Why (trans)national database

- Collaborative monitoring over large-scale areas – sharing and overview
- Effective analyses
- Policy tool
- Effective use of bycatch
- „...scientists are obligated to make their data available to others in a format that other scientists can use in future research (Council of Science Editors 2014)“







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Thank you for your attention!

