

Wildlife Monitoring Using Satellite and Wireless Sensor Networks: Wireless Internet Sensing Environment (WiSE)

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The use of camera traps has become increasingly popular in recent years as camera technology has improved and equipment costs have decreased. Despite their popularity and widespread use current, commercially available camera traps suffer a number of weaknesses, and have so far failed to embrace the advantages of wireless, satellite and Internet technology. The dot.rural WiSE (Wireless Internet Sensing Environment) project is researching and testing new digital image capture and transport techniques for remote and automated wildlife monitoring. Here we describe a solar powered system that is currently deployed and live in the Cairngorms National Park. The system combines image and video capture to monitor a remote study site. Image capture is controlled by multiple, configurable sensors that can run singularly or in series. The system includes sufficient processing power to allow on-board image processing to reduce the volume of unwanted (false positive) images and management of metadata. The system is linked via satellite Internet that allows two way communications between the system and end user. Successful field testing of the system has shown the potential advantages of remote image capture, data access and system management over satellite Internet in wildlife research, and indeed any remote asset management scenario.

Cyberforest Real-time monitoring and archiving system for nature conservation

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Today, the role and value of forests became more and more important for tackling global environmental issues because of the multiple functions of forests. But we feel the distance from forests. We believe that making people feel familiar and closer to the forests is very important as a first step for them, especially for children, to get a sense of wonder on miraculous forests live with frequent connections to forests. With the wide-spread usage of the internet, it is now possible to webcast in real-time the sensing information on distant natural forest as images and sounds.

We have developed a real-time monitoring, archiving system (RT-MAS) consist of video cameras, web cameras, microphones and weather sensors. RT-MAS has been installed in the deep natural forest without electric power supply, so it works with the electric power system combined with a solar cell and a deep-cycle-battery, and data is transmitted to the laboratory via the satellite internet. In turn, the laboratory broadcasts it online in real time, and at the same time those transmitted data is recorded on the server, creating an archive. This archive was made publicly available on the internet.

Geospatial Smartphone Apps and the use of Crowd Sourcing for the Recording of Invasive Non-Native Species

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Obtaining accurate data about the distribution of invasive non-native species (INNS) is of paramount importance when it comes to assessing impact and formulating an appropriate response. But data is often out of date, patchy and records are usually unverifiable and lacking accurate geographic reference.

The Nature Locator project and Natural Apptitude together with the EA, SNH and SEPA have addressed these challenges by combining the development of 3 bespoke smartphone applications with the power of crowd-sourcing data collection. The 3 apps PlantTracker, AqualInvaders and Sealife Tracker cover the majority of species of concern within the UK and enable high quality data to be collected by both scientists and the public in the field.