Rainforest rehab in every sense

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CSIRO sensors uncovering the microclimatic conditions favorable for rapid natural regeneration of degraded rainforest environments. Credit: CSIRO

Sophisticated sensors that measure leaf wetness, soil moisture and temperature are helping rehabilitate rainforest in the Springbrook World Heritage precinct in south-east Queensland.

The CSIRO sensors are being used to uncover the microclimatic conditions favourable for rapid natural regeneration of degraded rainforest environments.

A network of ten sensor nodes, connected wirelessly, has been sampling

parameters such as rainfall, humidity, temperature, soil moisture and the amount of available light inside the forest every five minutes since May 2008.

Over the next two years, another 200 nodes will be installed, some of which will measure biodiversity indicators, such as bird and frog calls.

CSIRO ICT Centre Research Scientist, Darren Moore, said the sensors are solar-powered and have been developed specifically for monitoring the complex, interlinked variables found in natural environments.

"In the rainforest, there is limited sunlight under the canopy which means we've had to develop sophisticated techniques to manage power," Mr Moore said.

"Our nodes are able to stay on-line, adaptively reducing their workload, to minimise the amount of power used."

Queensland Department of Environment and Resource Management spokesman, Jonathan Hodge, said the technology is helping to "push the boundaries of environmental science."

CSIRO's Sensor Network Technologies Research Director, Dr Michael Bruenig said the Springbrook project demonstrates that real-time data can be streamed back from open and covered rainforest using a low bandwidth wireless sensor network.

"CSIRO's FLECK™ devices are capable of low-powered wireless mesh networking, intelligent energy management and interfacing to a broad range of sensors," Dr Bruenig said.

"They are providing the capability to provide reliable, long-term monitoring of the natural environment which - in the case of

Springbrook - can be applied to rainforest ecosystems."

Source: CSIRO Australia