

## **RESEARCH SIDE OF THINGS AT WAITOMO'S GLOWWORM CAVE**

– Kate Banbury

In the last couple of years support for research students at the Glowworm Cave has increased and the results are starting to come in. The results and recommendations from these studies further improve our management techniques at the cave.

A masters thesis has been completed by a student studying seasonal changes radon in both Aranui and Glowworm Caves. It was found that there were no concerns at the Glowworm Cave, but at Aranui Cave the yearly average was nearly double safety standards of 1,000 Bqm-3 that is set for work environments. But due to current (and historical) practice of guides spending only one day a week at Aranui, exposure to individual guides falls well within the safety standards. In regard to long term management, a formula was developed that calculates radon dosage per year for individual guides based on the number of hours in each cave and weather conditions (i.e. ventilation). This formula was established using maximum values detected in the caves so that a wide safety buffer is given and is now part of our health and safety standards.

Another masters thesis has been completed of the aquatic invertebrates of the Waitomo Stream. Sites included immediately upstream, in, and downstream of the Glowworm Cave, as well as the wider catchment. Monthly sampling was completed for benthic, drift, and aerial stages of aquatic insects for a year. Physical and chemical measurements were taken at the same time at all sites to assess the water quality with respect to landuse and remediation efforts within the catchment, as well as to relate this to the insects present at each site. Only 8 years into the catchment control scheme, this study has shown positive effects of the retirement and planting schemes on the insect life in-stream already. This study also compared retired sub-catchments with those still dominated by farming. Another student is half way into a masters, studying the Waitomo catchment hydrology, and assessing the effects of land-use changes since the last study in the late 1970's. With this information accumulating, a good long-term data set on catchment conditions and changes is developing.

As noted in the last ACKMA journal, phase 1 of the catchment scheme has been completed. We are meeting again in the next month after a summer break to attack (and plan!) stage 2 with the same enthusiasm.

After months of lab testing, in summer this year a student started measuring actual levels of evaporation and condensation at a variety of sites in the Glowworm Cave. This initial study will provide base data for a further study into corrosive condensation. It is exciting to see data being collected (successfully!) of real values and fluctuations of condensation and evaporation.

For a while now we have been tinkering with a photomonitoring programme of the main glowworm colony in the Glowworm grotto. Although it has been a long process so far, we now have the photography side sorted out. There are still a few hiccups in the processing side though. A programme is being written that will count the number of lights and the intensity of the lights through scanning and analysis. This is being undertaken as there is no long-term record of the main colony of glowworms in the grotto. Although the glowworms have been a part of the monitoring programme since 1980, the sites used are not part of the main colony. The fungal pathogen to the glowworm, *Tolyphocladium extinguens*, will soon be under the microscope to gain a further understanding into humidity and temperature controls on infection. And the social scientists keep on surveying poor innocent visitors.....

A designer from Auckland has been commissioned to design and oversee the installation of the new displays. The project has been in the planning stage for nearly three years, and will come to fruition in June/July. The Museum display area will be closed for about a month while the displays, which have been built off site, are installed. The whole project will cost in excess of \$370,000 and while finance is available for the first stage, funds are still being raised for the second stage.