Young scientists compete for national water award

New technology that detects antibiotic chemicals in rivers, removes bacteria from water supplies, maps groundwater levels on farms, and models nitrogen levels in rivers are among several exciting projects being presented this week (4–7 September) in Brisbane.

Six young Australian water scientists are finalists in the 2006 Water Forum CRCs 'Young Water Scientist Award'. They will present their research to an international audience of river managers, scientists and policy makers at this year's International River*symposium.*

The $2500 award recognises outstanding projects that will be applied to conserve and protect Australia's water resources. It highlights the role that water-focused CRCs (Cooperative Research Centres) play in training young scientists to be future leaders in water technology and management in Australia. The six young finalists for this year's award are:

Healthy waterways, healthy communities: Melanie Cox of the (former) Coastal CRC will show how social and economic well-being is directly linked to the health of local rivers, beaches, bays and estuaries. Melanie developed a model based on surveys from Queensland coastal regions showing 'social capital' and industry are strengthened by improved waterway condition. Melanie's findings challenge the assumption that positive outcomes for the environment have an economic or social cost. Her results have important implications for urban planners and developers, especially as more Australians are moving to coastal regions.

Screening waterways for antibiotics: Drugs that fight infections are passing through waste water treatment systems and entering local waterways, posing a threat to human health and the environment. **Andrew Watkinson** of the CRC for Water Quality and Treatment has found while treatment systems remove most antibiotics, many escape into receiving waters. Many antibiotics pass through humans relatively unchanged and enter the water cycle. Small concentrations of these water soluble drugs often end up in water used for drinking, irrigation and recreation. Information from this study will be used to develop new guidelines for water treatment and waste discharge.

Keeping biofilm bacteria at bay: Biofilm, or surface bacteria that fouls and corrodes material immersed in water, is a serious problem which can release pathogens into our water supplies. New research by the Environmental Biotechnology CRC shows that reactive oxygen (ROI) and nitrogen (RNI) can remove biofilms and kill pathogens. **Nicolas Barraud** of the University of New South Wales has found that releasing low concentrations of nitric oxide into water is a harmless, relatively cheap and safe solution to control biofilm.

Technology maps denitrification in rivers: Increasing levels of dissolved inorganic nitrogen is bad for our streams and rivers. **Leo Lymburner** of the (former) Catchment Hydrology CRC, and Melbourne University, has developed a model that combines remote sensing data, terrain analysis and stream gauging station data to predict where catchment denitrification is likely to occur. The model is a valuable tool for catchment managers because it enables them to identify priority areas for protection and restoration.

Preventing wet roots: Sam Buchanan of the Cotton Catchment Communities CRC has developed new technology that accurately predicts groundwater depth at a very high resolution. Knowledge about the depth of groundwater is important to sustain a healthy ecosystem and maintain high agricultural yields by keeping groundwater out of the crop root-zone, particularly in landscapes suseptible to salinity. The high resolution maps will help farmers to provide enough water to sustain their crop while minimising the chances of bringing the salts into the root zone.

Plant model helps managers: Aquatic plants called macrophytes are an important source of organic matter for rivers. **Patricia Bowen** of the (former) CRC for Freshwater Ecology, and the University of Canberra, based at the Murray-Darling Freshwater Research Centre in Wodonga has developed a predictive computer model to show how river flows affect macrophytes and microbial functioning. Leaf litter, water flows, river shape, plant density and other factors can be integrated into the model. The model provides a tool for river managers to predict the outcome of proposed flow manipulations on macrophyte inputs to rivers and can be easily adapted to any site.

The six young water scientists will present their research findings during the first two days of the International River*symposium* at Brisbane Convention and Exhibition Centre.

The winning CRC student will outline their project on Wednesday 6 September at 4.30 pm in the main hall and receive their award of $2,500.

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