Crucial steps forward recognised at the Eurekas

This year's Australian Museum Eureka Prizes showcased some outstanding national and international research contributions to sustainable development.

Professor Mark Burgman of the School of Botany at the University of Melbourne won the **Botanic Gardens Trust Eureka Prize for Biodiversity Research** for his crucial work in understanding uncertainty and improving decision-making in conservation.

Burgman has created a suite of methods and tools to help conservation planners make the right decisions. His innovations handle uncertainty and unmeasurable risks, make conservation solutions more robust and protect endangered species from the unexpected. His solutions have now been adopted by The World Conservation Union (IUCN) and the Nature Conservancy.

Dr Rod Fensham and Russell Fairfax of the Queensland Herbarium won the **Sherman Eureka Prize for Environmental Research.** Over ten years, the researchers have methodically developed a scientific foundation to measure and understand the fate of Queensland's native rangelands. Their work, and their science advocacy, gave the Queensland Government the information it needed to create stronger laws on land clearing.

'Fensham and Fairfax looked outside the square,' says Brian Sherman, President of the Australian Museum Trust and sponsor of the prize. Starting with explorers' reports, old diaries, half a century's worth of aerial photos and many other sources, they were able to identify the real changes that had occurred in natural vegetation and to search for the causes of those changes.'

Rod Fensham and Russell Fairfax. Stuart Humphries, Australian Museum

'Collectively, their work forms a comprehensive, compelling and sophisticated chronicle. It represents a significant increase in our understanding of how to protect bush and grasslands.'

Mike Young and Jim McColl from CSIRO Land and Water in South Australia have applied their environmental economics skills to water management, winning the **Australia Eureka Prize for Water Research**. Their ideas underpinned the development of a National Water Initiative, a scheme promoting productivity, sustainability and efficiency of Australia's water usage.

They have developed better ways of managing water rights and allocation. The major application of their research has been in the Murray-Darling Basin – the heartland and economic powerhouse of rural Australia.

By allocating water entitlements as 'shares' and distributing these shares via a central, bank-like accounting system, the inefficiency of current 'piecemeal approaches' is neutralised. Water usage can be managed effectively like any other economic commodity. Shares make it clear that, like the stock market, water availability may change. A series of licensing initiatives manages how 'water shares' are used, ensuring usage is economically and environmentally sustainable.

The Victorian Sustainable Schools program won the **Department of Environment and Conservation Allen Strom Eureka Prize for Sustainability Education**. Started as a pilot in 2001 with just eighteen schools, today over 160 schools across the state are engaged in best-practice sustainability education.

More information:
Eureka Prizes:
www.austmus.gov.au/eureka/index.htm

Sponges, such as this cold-water species found off Tasmania, are yielding unique compounds with great potential for cancer and viral treatments. Graham Blight

marine-source, for example, we might need to harvest 20 000 tonnes of a particular sponge per year to meet the global market need and this is ecologically unsound,' Dr Battershill said.

This recent work provides the solution by taking the genes responsible for manufacturing a cancer-fighting chemical produced by a seasquirt, and placing them in an easy-to-culture bacterium, which now produces the chemical. 'Using this methodology, we need only one small collection of the seasquirt to obtain a long-term supply of the chemical, which has potential for the treatment of certain types of lymphoma,' said Dr Paul Long of London University.

'The work succeeded in record time because of the unique collaboration between an ecologist, a biochemist, a chemist and a molecular biologist. The facilities at the Australian Institute of Marine Science, and their access to the Great Barrier Reef to collect the seasquirt played a vital part in this study,' Dr Long added.

The team is now refining a universal cloning technique to produce other high-value marine products, particularly those with exceptional therapeutic potential for which clinical development has stalled from a lack of a renewable supply.

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