Media release

Cut water use to save bush

18 Feb 2013

Australians may be asked to reduce their use of bore water in order to preserve their cherished native landscapes.

Researchers at the National Centre for Groundwater Research and Training (NCGRT) have found that eucalypts, melaleucas, acacias and other Australian native trees drink much more groundwater than previously thought.

“We may have significantly overestimated how much water we can pump out of our aquifers,” says Mr Parikshit Verma of NCGRT and Monash University. “Past models used to predict groundwater resources have neglected how these trees can use special pathways to harness groundwater, especially during long, dry periods.

“Our new model shows that during dry periods, the native plants can use nearly 50 per cent more groundwater through these pathways than was allowed for in the past.”

“It’s critical that we now re-evaluate how much groundwater we allocate for our own uses, as over-extraction can kill the plants and their surrounding landscapes.”

Known as phreatophytes – plants that can exploit groundwater – most Australian trees grow naturally in areas where they have access to a steady supply of water, Mr Verma explains. Apart from growing dense root networks to absorb surface water, they also develop deep roots that can reach ten metres into the ground.

By having roots in several soil areas, the trees are assured of a drink even during dry periods, Mr Verma says: “In drought when there isn’t enough water in surface soils, Australian natives rely on groundwater to keep them going.

“Their deep, thick roots compensate for the lack of surface water by taking up groundwater from lower soil layers. The tree then releases this into the surface soils, so it can be used the following day.”

Mr Verma’s model is the first to quantify how much groundwater the plants use through this pathway. It has been tested at a field site near Sydney and proven accurate for this site.

“Australian native trees not only create our landscapes and shelter wildlife – they also provide us with the air we breathe, timber and fuel, prevent erosion and floods and help keep our water clean. We need to take greater account of their needs in future – because they look after us.

“Now we know our landscapes are much more dependent on groundwater than previously thought, Australians will need to allocate more of our bore and well water to maintaining them. This means being more sparing in our use of bore water, especially during drought.”

While maintaining the health of native plants and landscapes is a priority, it often conflicts with our increasing demand for groundwater, says Professor Derek Eamus of NCGRT and The University of Technology Sydney.

“In the past, it was extremely difficult to estimate how much of the plants’ water comes from groundwater,” Prof. Eamus says. “So the two major questions with groundwater extraction are often: how much can we take and when is it okay to pump out more?

“With this new model, we now know how much groundwater we can extract without harming the vegetation. This discovery is a major step towards managing both groundwater and landscapes harmoniously.”

The finding also has important implications for large scale revegetation and tree planting programs, Prof. Eamus says.

The National Centre for Groundwater Research and Training is an Australian Government initiative, supported by the Australian Research Council and the National Water Commission.

NATIONAL CENTRE FOR
GROUNDWATER RESEARCH & TRAINING
GPO Box 2100 | Adelaide SA 5001 | Australia
p: +61 8 8201 2193 | f: +61 8 8201 7906
enquiries@groundwater.com.au
www.groundwater.com.au

“If we underestimate how much water the plants need and plant on a large scale in the wrong places, it could reduce the amount of rainwater that flows into our aquifers, and may even stop groundwater flowing into rivers,” he says.

“This could change the local water balance, which could have an impact on irrigators, towns and river health. So it’s crucial that we know how much groundwater trees need before we plant on a significant scale in a new landscape.”

Mr Verma has presented the discovery at the Asia Oceania Geosciences Society-American Geophysical Union conference. The abstract is available at: http://bit.ly/10rL2AI

FURTHER INFORMATION:

Professor Derek Eamus, NCGRT and UTS, ph +61 (0)2 9514 4154 or +61 (0)408 669 639
Mr Parikshit Verma, NCGRT and Monash University, ph +61 (0)3 9905 4957 or +61 (0)433 446 794
Wayne Barbour - Media Contact NCGRT, Phone: +61 (0)407 379 587; Email: wayne.barbour@flinders.edu.au

The National Centre for Groundwater Research and Training is an Australian Government initiative, supported by the Australian Research Council and the National Water Commission.

NATIONAL CENTRE FOR
GROUNDWATER RESEARCH & TRAINING
GPO Box 2100 | Adelaide SA 5001 | Australia
p: +61 8 8201 2193 | f: +61 8 8201 7906
enquiries@groundwater.com.au
www.groundwater.com.au